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I. Articles

THE CHANGING STRUCTURE OF THE BRITISH ECONOMY
E. A. G. ROBINSON 443
INCREASING PRODUCTIVITY, INCOME-PRICE TRENDS AND THE TRADE BALANCE ... ... H. G. JOHNSON 462
THE 1948–49 AMERICAN RECESSION ... ... C. A. BLYTH 486
LINEAR EXPENDITURE SYSTEMS AND DEMAND ANALYSIS: AN APPLICATION TO THE PATTERN OF BRITISH DEMAND
J. R. N. STONE 511
CLASSIC AND CURRENT NOTIONS OF "MEASURABLE UTILITY"
D. ELLSBERG 528

II. Reviews (For List of Books Reviewed see inside cover) 557

III. Notes and Memoranda

INSTABILITY OF PRIMARY PRODUCT PRICES: A PROTEST AND A PROPOSAL
SIR SYDNEY CAINE 610
A NOTE ON THE DETERMINATENESS OF EQUILIBRIUM ... A. K. DAS GUPTA 614
STERLING BALANCES AND THE COLONIAL CURRENCY SYSTEM:
A REPLY ... ... A. HAZLEWOOD 616
A COMMENT ... ... B. M. NICULESCU 618
TERTIARY PRODUCTION: A POSTSCRIPT ... ... A. G. B. FISHER 619
A NOTE ON THE DEFINITION OF NET NATIONAL PRODUCT ... ... A. A. WALTERS 621
MR. KALDOR ON INDUSTRIAL FLUCTUATION: A METHODOLOGICAL FOOTNOTE
D. McCORD WRIGHT 622
THE SIZE OF THE FACTORY: A REPLY ... ... P. SARGANT FLORENCE 625
CURRENT TOPICS 629

IV. Recent Periodicals and New Books 634

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REVIEWS

PAGE

BELL (J. F.). *A History of Economic Thought* ... By G. FINDLAY SHIRRAS 566

BLYUMIN (I. G.). *Kritika sovremennoi burzhuaznoi politicheskoi ekonomii Anglii* By A. D. NOVE 570

BROWN (W. A.) and OPIE (R.). *American Foreign Assistance* By D. J. MORGAN 561

CLARK (C.). *Welfare and Taxation* ... ... By C. W. GUILLEBAUD 576

COLLIER (A.). *The Crofting Problem* ... ... By P. DEANE 595

DAY (A. C. L.). *The Future of Sterling* ... ... By SIR D. ROBERTSON 557

FRANKEL (S. H.). *The Economic Impact on Underdeveloped Societies* By P. T. BAUER 580

GILLESPIE (S. C.). *A Hundred Years of Progress. The Record of the Scottish Typographical Association 1853 to 1952* ... ... By E. J. HOBSBAWM 599

HICKMAN (W. B.). *The Volume of Corporate Bond Financing since 1900* By B. TEW 589

JÖHR (W. A.). *Die Konjunkturschwankungen* ... By F. A. BURCHARDT 563

KEMENY (G.). *Economic Planning in Hungary, 1947–9* ... By L. ROSTAS 602

KINDLEBERGER (C. P.). *International Economics* By SIR D. MACDOUGALL 559

KUPER (L.) and others. *Living in Towns : Selected Research Papers in Urban Sociology* ... ... By K. LIEPMANN 593

Labour Productivity of the Cotton Textile Industry in Five Latin American Countries By L. ROSTAS 591

LANGE (O.). *Zagadnienia Ekonomii Politycznej* ... ... By M. C. KASER 572

LITTLE (I. M. D.). *The Price of Fuel* ... ... By H. S. HOUTHAKKER 578

PEACOCK (A. T.) (Ed.). *Income Redistribution and Social Policy* By D. C. HAGUE 574

SCHLESINGER (R.). *Central European Democracy and its Background : Economic and Political Group Organisation* ... ... By M. J. BONN 601

SCHULTZ (T. W.). *The Economic Organisation of Agriculture* By E. H. WHETHAM 585

SWEEZY (P. M.). *The Present as History : Essays and Reviews on Capitalism and Socialism* ... ... By R. L. MEEK 607

WESTON (J. F.). *The Role of Mergers in the Growth of Large Firms* By P. L. COOK 586

WILLAN (T. S.). *The Muscovy Merchants of 1555* ... By E. E. RICH 604

WOYTINSKY (W. S. and E. S.). *World Population and Production : Trends and Outlook* ... ... By P. SARGANT FLORENCE 605

WRIGHT (L. C.). *Scottish Chartism* ... ... By A. V. COLE 597

THE ECONOMIC JOURNAL

SEPTEMBER 1954

THE CHANGING STRUCTURE OF THE BRITISH ECONOMY [1]

THE dynamic development of the economy of any nation derives from a two-fold process of adjustment: it derives in part from a constantly continuing adjustment to technological progress; in part from adjustment to the changes in the quantities and distribution of resources of materials and skills possessed both by the particular nation and by other nations. There emerges from these adjustments superimposed upon its own past history the structure of that particular economy at that moment of time. The structure often reflects only imperfectly the needs of the moment, for economic structures change slowly, and it is only in a period of relatively slow change that the actual structure and the ideal structure are likely to be identical. It is the changes in the structure of the United Kingdom's economy during the past two or three centuries, and particularly during the past hundred years or so, that I wish here to review very briefly. For we live in a period when large and more than usually rapid structural adjustment is both needed and taking place. I believe that the problems that confront us to-day are more easily understood if we see them in the perspective of the changes of structure that have occurred in the past.

The essential features of any nation's economic structure are made up of the pattern of employment and activity, the pattern of export and import, and the pattern of consumption. These patterns are in their turns related to and derived from the available resources, both natural and, as in the case of skills, acquired and inherited from an industrial tradition.

It is normal to think of the economic structure of any one nation as greatly influenced by the abundance of certain resources and by deficiencies of others. At the beginning of the eighteenth century it was still true to say that the pattern of the British economy derived in large measure from our ability to export the

[1] Presidential Address to Section F of the British Association, delivered at its meeting in Oxford, September 1954.

indigenous products of which we had a surplus. Of the £3·6 million or thereabouts of exports of produce and manufactures of the United Kingdom, for the year 1688, about £2 million represented woollen manufactures, and most of the rest represented exports of coal, lead, tin and other indigenous products. It was quite late in the nineteenth century that there developed the complexities of our structure, whereby we import not only the materials required for our exporting industries, but also the greater part of the food needed to maintain our population.

May I begin, then, with the structure of 1688, when Gregory King, Lancaster Herald of Arms, made the study of *The State and Condition of England* which is the starting point for all modern macro-economic investigation? England, with a population which King puts at 5,500,000, had an income which, slightly adjusted to bring it into line with current definitions, may be put at about £50 million. Retained imports, which he estimates at £2·8 million, were approximately 5½%, therefore, of national income.

Of a total of personal expenditure which amounts to about £46 million, approximately 51% was estimated to be spent on food and 25% on clothing. Of the food consumed, a very small proportion, mainly composed of tropical produce and wines, would seem to have been imported. Down to about 1730, England was an exporter rather than importer of grain. The proportion of man-power resources devoted to agriculture cannot be estimated with any certainty from King's figures.[1] The proportion of gross national product estimated by him to be derived from agriculture is about 40%, and the proportion of man-power employed in agriculture must clearly have been at least of that order of magnitude, and probably considerably greater.[2]

Thus at the beginning of the eighteenth century we have a structure that is still predominantly self-sufficient, whose imports are primarily manufactures and the produce of other climates, whose exports are based on the utilisation of plentiful indigenous resources, and whose man-power is primarily devoted to agricul-

[1] If one is prepared to regard his categories of "labouring people and outservants" and "cottagers and paupers" as primarily agricultural the proportion would be as high as 75%. If, as seems likely, the first of these categories is intended to include most of the unskilled labour in the towns (artisans and handicrafts are elsewhere included), and both of them a certain amount of domestic industry, the proportion might be nearer to 65%.

[2] In 1691 Sir William Petty commented, "There is much more to be gained by Manufacture than Husbandry; and by Merchandise than Manufacture" (quoted by C. Clark, *Conditions of Economic Progress*, 2nd Edition, p. 395).

ture, and which provided a level of real consumption per head a little under half of that of 1925–34.

I wish that one could find an opportunity for comparisons in the middle of the eighteenth century. It is sad to have to say that the century of English economic history which is of greatest potential interest, in that it saw the largely unexplained acceleration from the slower processes of earlier centuries to the rapid cumulative progress of the past two hundred years, is also the century that is completely lacking in estimates of national income and of the other main bench-marks to which one can refer such other statistical information as we possess.[1]

The earliest date after 1688 at which we can again attempt to see the main features of our economic structure is around 1800–12. The various estimates of Beeke, Levi, Colquhoun, none of them individually wholly complete or internally consistent, nonetheless give us a sufficient basis from which to calculate rather imprecisely the essential elements of the contemporary structure. The national income of the United Kingdom was probably about £400 million at prices of 1812. Retained imports, affected by war, were fluctuating in the range at current prices of £40 million to £80 million,[2] with a mean at prices of 1812 of about £49 million. Thus the import ratio would appear to have become something of the order of 12%. That is about the figure also for 1820, and it is from about 1820 that the data begin to accumulate from which one can see the main changes in the essential features of the structure in a peace-time economy.

In the years between 1820 and 1830, then, the structure of the United Kingdom had already begun to alter in many essentials. Exports were composed now only to the extent of about 50% of indigenous products of the United Kingdom and manufactures made from them; woollen manufactures accounted for a little under

[1] I believe that it is worth trying, even now, to see whether this deficiency cannot be remedied. We have greatly developed in the past twenty-five years the arts of establishing the orders of magnitude of the national incomes of backward countries by the ingenious use of many individual clues to establish the totals of incomes, production and expenditure and to permit estimates of each of these to be employed as a cross check on the others. It is by no means clear that sufficient data do not exist to enable us to do much the same for the eighteenth and early nineteenth centuries, basing oneself in part in the latter case upon some of the rudimentary and internally inconsistent estimates made at the time. I am delighted that Miss Deane, of the Department of Applied Economics at Cambridge, is exploring these possibilities in connection with Dr. Simon Kuznets' big international project for the measurement of economic progress.

[2] As revalued from official values to current values by Professor A. H. Imlah, "Real Values in British Foreign Trade, 1798–1853," *Journal of Economic History*, November 1948, pp. 148–9.

12%, and coal for about 1%; cotton manufactures accounted for about 48% of the whole, textile manufactures of all sorts to about 67% and manufactures of all kinds to about 90%. On the other side of the account, in consequence, imports of materials were also about 60% of the whole, out of which textiles materials, mainly cotton, accounted for about 24%. Retained imports of food, drink and tobacco were equal to about £20 million at actual values, and may be compared with a production of about £120 million in agriculture; thus foreign supplies of food represented something of the order of one-seventh of total supplies. The Census of 1821 gives us some limited help in seeing how the occupied population was employed: in England and Wales, about 34% (a figure close to that of France before the last war) are reported as employed in agriculture and fishing; about 46·5% were engaged in trade, manufactures and handicraft; the remaining 19·5% were accounted for by all other forms of services and employments. Thus the economy had already moved a long way from the pattern of 1688. It had no longer in anything like the same degree as then the features that we now associate with an "underdeveloped country": the relatively large proportion of population engaged in agriculture or engaged in the trading and handicrafts associated with it; the chief imports composed of manufactures and chief exports of primary products (that feature had largely disappeared before 1750). But the structure was still a long way from that which developed later in the century.

By 1850 we are beginning to see more clearly the features of what most of us were brought up to regard as the timeless characteristics of the British economy. The import ratio had now risen to about 18%. Exports are composed to the extent of over 90% of manufactures; textiles still predominate and account for about 63% of total exports; woollens 14%, cottons 40% and the rest mainly linen. Imports are still largely composed of raw materials for the textile industries, which account for 32% of the whole. Food imports are now increasing, and are about 34% of the whole, with grain imports up to 10% as against 4% in the 1820s. Exports are to a significantly smaller extent than in earlier years based on indigenous supplies. Of total exports of British products and manufactures, between 2 and 3% are accounted for by coal; wool from our own sheep provided now about 70% of total supplies, as against 95% half a century earlier, and we are beginning to be dependent on imported supplies of other materials also which had earlier been derived from home

sources. The distribution of man-power reflects these and other changes. The proportion of occupied population engaged in agriculture has fallen to somewhere about 21%;[1] better Census classifications, introduced in 1841 and which persisted almost unchanged until 1911, enable one to see the employment of the rest of the occupied population in more detail; manufacturing in total employs just under 33% of the whole—a figure which was not exceeded until 1951—and of these over 22% are accounted for by textiles and clothing, a percentage very nearly three times as high as that of 1951.

Between 1850 and 1870 these features of high specialisation, a high import ratio, great dependence on manufactured exports, and especially on textile exports, diminishing dependence on indigenous raw materials and diminishing dependence of home food supplies all took a much more pronounced form. Britain was very rapidly adjusting her economy to a world market, made accessible by new and improved forms of transport.

But it is important to remember how immensely different that world was from the world of to-day. In 1850, so far as I can judge from some brave guessing to fill in gaps in the calculations of Mr. Colin Clark which cover the majority of the bigger countries, the real income of the world was between a fifth and a quarter of what it was in 1937. It has grown since 1850, partly as the result of unprecedented population growths, partly as the result of the great growth of productivity. But in the process of that growth it has come to be very differently distributed. Of the world income of 1937, about 29% was that of the North American countries and 4% that of Central and South America; Western Europe accounted for about 31% and Eastern Europe for about 11%; the Far East for only about 20%; all other areas, including Africa, Australasia, the Middle East, for about 5%. Of the world income of 1850, the largest share almost certainly went to the Far East, which would appear to have enjoyed something over 40% of the whole; North America had a real income comparable with that of Africa to-day, and accounted for only about 10% of world income, with Central and South America representing about another 3%; Western Europe had a slightly smaller share than now, with about 29%; Eastern Europe was rather more important, with about 14%; the Middle East had about the same

[1] There are considerable difficulties in interpreting the 1841 and 1851 Censuses in this respect, and particularly in judging from them the trend between those two years. See Charles Booth, "Occupations of the People of the United Kingdom, 1801–81," *Journal of the Royal Statistical Society*, Vol. XLIX, p. 325.

share as to-day; Australasia and Africa were almost completely negligible.

It was to the resources and requirements of that very different world that Britain was adjusting herself at the middle of the nineteenth century—a world in which the predominantly agricultural countries of new settlement were anxious to trade their primary products for manufactures; a world in which about 65% of the occupied population of the United States was still engaged in agriculture; a world in which Britain was probably responsible for over 40% of the world's total output of manufactures.

It was between 1850 and 1870 that the nineteenth-century structure reached its more complete form. By 1870 the ratio of retained imports to net national income at factor cost had risen to about 28%—a figure surpassed only for a short time in the 1880s, when it reached for a few years a level of about 33%. The pattern of imports was changing. About 35% of all imports were now food, of which grain was 9%, and about 50% raw materials; manufactures accounted for about 15%. But the main sources of food were still in our own agriculture. For the year 1867, according to estimates by James Caird,[1] home agricultural produce accounted for about 82% of total supplies of the main staple foodstuffs, and probably about three-quarters of the whole when allowance is made for imports of sugar and other tropical produce. Exports of textiles accounted for about 56% of the whole; cotton now 35%, wool 13%. But exports of metals and metal manufactures were beginning to mount; they now represented 21% of the whole. At the same time the industrial distribution of the occupied population increasingly reflected this changing emphasis. Between 1851 and 1871 the proportion engaged in manufacturing of all kinds slightly declined, if one may trust the figures, from about 33% almost to 30%; but within the total metal manufactures rose from 6% to nearly 7½%. The proportion in agriculture fell heavily—from 21½% to a little over 14%, while the proportion engaged in transport and commerce rose from just under 11% to about 13½%.

Between 1870 and 1913 the overall ratio of retained imports to net national income remained relatively steady, rising from the 28% of 1870 up to a peak of 33% in the 1880s and then falling

[1] See James Caird, "On the Agricultural Statistics of the United Kingdom," *Journal of the Royal Statistical Society*, Vol. XXXI, pp. 127–45. The estimates are concerned only with such basic foodstuffs as grain, beef and mutton, butter and cheese, potatoes, and take no account of tropical imports, fruit, tea, coffee and the like.

back to slightly lower figures in the 1890s. But in all else the change continued to be rapid. The redistribution of manpower continued. Agriculture, which had given employment to over 14% of the occupied population in 1870, was down to 8½% at the turn of the century and to about 8% by 1913. The total of manufacturing retained its surprising stability around 29–30% of the whole, but within this total the redistribution continued, away from textiles, which fell from about 18% in 1870 to about 13½% by 1913, and towards metals and engineering, which rose over the same period from about 7½% to about 10% of the total. And the trend towards transport, commerce and distribution continued; this group rose from 13½% in 1870 to about 20% in 1913.

Parallel with this redistribution, and springing from the same causes, was a change in the pattern of imports. At 1850 and again at 1870 food imports had been close to 35% of the whole; they rose to about 42% of the whole at the turn of the century, and for the first time were larger than raw-material imports; the share of the latter increased again by 1913, but it remained nearer to 40% than to the 50% of 1870 or the 60% of 1850.

It is not easy to measure precisely the degree of dependence on imported food at the culmination of the nineteenth-century development, much as one would like to do so. As regards grain of all types, we imported about 50% of our total supplies at the turn of the century [1] and 55% in 1913, as compared with about 70% in 1936–38. As regards meat, we imported about 40% in 1900, and again in 1913, rising to just under 60% in 1936–38. Overall, and including products in which we were much nearer to self-sufficiency, I would guess (and it can be no more than a guess) that home agriculture provided about 50% of our food in 1900, about 45% in 1913,[2] about 35% in 1936–38, with a return to about 50% in the last few years.

Thus by 1913 the structure based on a high specialisation in manufacture, on imported materials and on imported food had reached its fulfilment. At the 1911 Census agriculture accounted for only 8·1% of the occupied population, as compared with 21·6% seventy years earlier. Manufacturing in total gave employ-

[1] See R. F. Crawford, "Notes on the Food Supply of the United Kingdom, Belgium, France and Germany," *Journal of the Royal Statistical Society*, Vol. LXII, pp. 597–629.

[2] See estimate for 1911 by Sir Henry Rew, "The Nation's Food Supply," *Journal of the Royal Statistical Society*, Vol. LXXVI, pp. 98–105. The proportion in terms of value, provided by home production was about 52% if tea, coffee, cocoa and sugar (of which there was then no home production) are excluded.

ment to just about the same proportion of the whole. The proportion of the occupied population engaged in transport, commerce and distribution had grown by about as much as that in agriculture had declined.

It was a specialisation no longer based on indigenous resources. Coal, it is true, still accounted for 10% of our exports, and woollens for 6%. But the woollens were increasingly produced from imported wool; it had formed 50% of the available supply [1] in 1857–63; it now formed about 84%. It was a specialisation still based predominantly on textiles. And new textile industries were beginning to grow all over the world—not only in North America, but also in Japan, India, China, and later in South America. Thus the structure became insecure almost at the moment that it was completed. The British share of the world total of production of manufactures inevitably declined as new industries grew up in other countries; it is almost a tautology to say so. Whereas the British share had been probably appreciably above 40% in 1850, it was down to about 32% in 1870, about 20% at the turn of the century and about 14% in 1913.[2]

The structure of 1913 was one of very considerable immediate advantage to Britain, but it was inherently fragile. No one country could possibly hope to retain indefinitely, however great its technical leadership, the share of world manufacturing that fell to us in the middle of the nineteenth century, or the share of world trade in manufactures that went with it. The share of that trade held by Britain fell from about 40% in 1870 to about 30% at the turn of the century and 27% in 1913. It was a declining share, however, in a rapidly growing total. Thus the problem of paying for imports was never acute before 1913; normal imports had never been increased to the full capacity to pay for them, and invisible earnings left a handsome investible surplus in most years. But what I wish, nevertheless, to emphasise is that, quite apart from wars, our 1913 structure was based on an advantage which was temporary and not permanent: that the incentives to shift resources to industry and reduce primary production were already in operation in many countries on which we depended, and might have been expected in the course of time to push us back from the position of extreme specialisation that suited us so admirably for the moment.

It was, moreover—and I do not think this is generally realised

[1] See C. T. Saunders, "Consumption of Raw Materials in the United Kingdom, 1851–1950," *Journal of the Royal Statistical Society*, Vol. CXV, pp. 336–8.

[2] See *Industrialisation and Foreign Trade*, League of Nations, 1945, p. 13.

—a structure that was not based, or not in its extreme form, on a system of comparative advantages. It is not true to say that British productivity in manufacturing was higher in relation to British productivity in agriculture than that of many of the countries from which we were increasing our imports. The ratio of the value of production per head in industry to the value of production per head in agriculture has been more favourable to industry and less favourable to agriculture in the United States than in the United Kingdom certainly since 1870. The same is also true of Canada, if one may make plausible assumptions regarding Canadian productivity per head in agriculture for which contemporary estimates do not exist for the earlier years. It was only in Australasia and in South America that the comparative advantage lay throughout heavily on the side of agriculture.

The gain that we secured by specialisation derived from the terms of trade subsisting everywhere between manufactures and primary products. Over the greater part of the last eighty years there has been an advantage to any economy anywhere (with exceptions in Australasia and South America) which moved resources out of agriculture into industry and which exported manufactures and imported primary products. We in Britain could benefit through the fact that our technical lead, our financial resources and our geographical setting put us in the position to move more quickly than others.

The structure was inherently fragile in a second sense. Growing population to be nourished with food, growing industries to be nourished with materials, meant increasingly that marginal supplies must be derived from abroad. Food supplies by 1913 came, as I have said, to the extent of about 55% from abroad. At the same time we were coming to depend ever more and more on raw-material imports, not only because of increased needs but also because of exhaustion of supplies. In 1857–63 we could supply all our needs of lead, 88% of our needs of tin and 71% of our needs of copper. By 1907–13 we supplied only 11% of our lead, 21% of our tin and 1% of our copper. In 1857–63 we could depend on our own wool supplies for 58% of our needs; in 1907–13 the figure was down to 22%, and similarly for flax.[1]

The years from 1919 to 1939 saw the working out of some of these forces that already existed before 1913. But to those already existing forces was added a new and more powerful force: the emergence of the United States during the First World

[1] See C. T. Saunders, *loc. cit.*

War to a position of leadership in manufacture. Her share of world production of manufactures had first exceeded our own in the 1880s; it was about two and a half times our own by 1913, and remained about four times our own through most of the inter-war years. But the United States share in foreign trade in manufactures was by no means proportionate to her production, and remained between a quarter and a third of our own down to 1913. It increased to well above a half of our own in the years immediately following 1918, and rose to about four-fifths of our own during the later inter-war years. That dramatic growth of competition in our markets, and the subsequent and comparable growth of that of Japan, together with the loss of foreign assets during 1914–18, meant that the structure of 1913 required to be changed far more rapidly and more extensively than would otherwise have been necessary. I would in retrospect regard many of the travails of the 1930s as part of the inevitable and painful process of world adjustment and of our own adjustment to the growth of the United States and Japan.

The immediate effects were, however, obscured and their severity diminished by the favourable turn of the terms of trade in the 1930s,[1] partly, it is true, the consequence of the lower prices of primary products relatively to manufactures to be expected in depression, but chiefly to be ascribed to the great revolutions in agriculture: mechanisation, new fertilisers, better strains, better transport. This favourable turn permitted us to survive the 1930s with appreciably less structural change than would otherwise have been required.

What were the chief changes in our structure during these years? First, and largely a consequence of the change in the terms of trade, the ratio of the value of retained imports to net national income fell back from the 28% of 1913 to 20% in 1938. But with the aid of these improved terms of trade, and in the face of increasing difficulties, we retained the other main features of the 1913 structure. Man-power in agriculture continued to fall; it was down to about 5·7% of the occupied population [2] by 1931; the proportion in manufacturing remained about constant; that in commerce, finance and distribution continued to grow. But the main feature of these years was the decline of the textile industries and the growth of the metal industries. In 1851

[1] The volume of imports which would have cost 100 units of exports in 1913 could be bought by an average of 70 units during the years 1931–39.

[2] On the classification of the period 1841–1911; the classification was slightly changed in 1921.

there were 22% of the occupied population in the textile industries; by 1911 the figure was about 13½%; in 1931 it was below 11% and in 1951 under 8%. The metal industries employed 6% in 1851; they had reached nearly 10% in 1911, about 12% in 1931 and 17½% in 1951.

This change was naturally associated with the change in the character of our exports. Textiles had provided 63% in 1850 and 34% in 1913; by 1937 the figure was down to 24% and by 1951 to 19%. Metals and engineering products provided 18% in 1850; they were 27% in 1913; they were up to 35% by 1937 and to 49% by 1951.

Despite the strains of the 1930s, we continued to increase our dependence on imported food. For our raw-material supplies, with the possible exception of iron ores, we also became increasingly dependent on imports. Home supplies of wool and flax and of non-ferrous metals declined further.

This structure was, however, proving increasingly difficult to maintain. Despite exceptionally favourable terms of trade, we were failing to pay our way on current account and balancing our payments with the help of drafts on our past foreign accumulations. Thus we entered the war with a structure very imperfectly adjusted to our current circumstances. The consequences of the war and, far more than those, the consequences of a reversal of the terms of trade left us with a structure very ill-adjusted to the world in which we now live.

May I look back for a moment on the century as a whole? In 1820 and right down to the 1870s we were scarcely as yet in any full sense a nation of shopkeepers. We were a nation of linen drapers—of John Gilpins rather than of William Whiteleys. We built our nineteenth-century economic structure and we multiplied the population of 1750 six-fold on the basis of our ability to sell cotton and woollens. We created by 1913 a nation which depended for about seven-eighths of its raw material supplies, apart from coal, and for over half of its food supplies on its continued ability to sell some kind of export into a world which was becoming less dependent on its textiles. Since the 1870s we had expanded metal and engineering exports, and by 1913 they were a quarter of the total. But it is mainly in the period between the wars that we changed to being a nation dependent primarily on our ability to sell engineering goods, and in that field we have never enjoyed the sort of predominance we had for over a hundred years in textiles.

Before I go on to consider the forces that may during the

next decade require further adjustment of our structure, may I pause to contrast the structure that has emerged from our history during the past two centuries with that which has emerged from the very different history of Western Germany.[1] Western Germany has a population very similar to our own—49·0 millions, as against 50·8 for the United Kingdom. The total areas of the two countries are almost identical. The agricultural areas are not widely different: Western Germany had 8·5 million hectares of arable in 1948–52 as against 7·4 millions in the United Kingdom; the United Kingdom had 12·1 million hectares of permanent grass against Germany's 5·5 millions; Germany had 7·0 million hectares of forest as against our 1·5 millions. In normal peacetime conditions the real incomes per head have not been widely different; the United Kingdom probably had an advantage of some 15% as compared with the average of all Germany before the war, but the advantage over the more industrialised Western Germany was almost certainly less; recent calculations have shown a wider discrepancy for 1952, possibly as great as 20–25%, a discrepancy not unexpected and largely explicable in terms of the different consequences of the war.

In all else the structures of the two countries are radically different. In 1953 the import ratio for the United Kingdom was about 26%, that for Germany about 16%. It is not possible to carry back the German ratio in terms of anything like the present area. In 1937–38, when the United Kingdom ratio was about 20–22%, that for pre-war Germany as a whole, very much larger and more self-sufficient, was about 7–8%. But the discrepancy had been much less in earlier years. In 1913, when the United Kingdom ratio was 28%, that for the contemporary area of Germany was about 24%.

The lower ratio and the lower income per head taken together mean that in 1953 German retained imports were about two-fifths British imports. Western Germany supports at present an industrial production about two-thirds of that of the United Kingdom, with imports of raw materials about one-third of the United Kingdom. She succeeds in doing this partly because of a much smaller activity in the textile industries, partly because of her almost complete dependence on her own timber resources; these two sources of savings of imports accounted for two-thirds of the difference.

In food, the United Kingdom is now dependent on imports

[1] See, *inter alia*, *Economic Survey of Europe since the War*, United Nations, Geneva, 1953, pp. 97–9.

for about half her foodstuffs; Western Germany for about one-fifth. But, with the imported food, the United Kingdom real consumption per head was in 1952 some 15–20% higher than that of Germany.[1] The agricultural output of Western Germany is almost half as great again as that of the United Kingdom. She has achieved this by devoting to agriculture about 16% of her occupied male population, as against 6% for the United Kingdom.

I do not wish to hold up the Western German economy as a model that we ought to copy. Both countries have much that they might learn from each other. The higher standard of life that we have enjoyed has in the past, I am convinced, derived in considerable measure from our greater specialisation and trade. I believe that Germany will be found as the years go by to be progressively moving again towards higher imports and higher exports, and in consequence becoming more directly competitive with the United Kingdom. But I do believe that one may learn both from the history of our own past and from a comparison with Germany that economic structures are not unchangeable and permanent for all time, but capable of great variation, and from time to time requiring great variation.

In what directions can we expect our own structure to change under the stimulus of the market forces and the economic pressures of a changing world? My own view—and I claim for it no special authority—is that the structure which we created to such profit in the second half of the nineteenth century was fundamentally based on two factors. First, it was based on the possession by us of a leadership in manufacturing and a corresponding share of world trade in manufactures which have been diminishing progressively. I do not think that it is within our power, whatsoever energy and skill we may develop, to recapture anything comparable with that leadership. It was based on a concentration of discovery, of scientific knowledge and of practical expertise within a single country such as we can hardly imagine to be capable of repetition by any country. It was based on a slowness of the dispersal of knowledge and a lack of the technical background required for receptivity such as can hardly be re-created once it has disappeared. The degree of technical leadership of the United States to-day is in no sense comparable with that of the United Kingdom in the middle of the nineteenth century. And to that we must add the continuing improvements in means of transport, and particularly in land transport. I think the degree

[1] See *An International Comparison of National Production and the Purchasing Power of Currencies*, by Milton Gilbert and Irving B. Kravis, Table 12.

of difference in comparative productivity in different industries, apart from advantages of access to very advantageous raw-material supplies, is diminishing as compared with the nineteenth-century differences, and to an increasing extent the country in which man-power is four-fifths as productive as that in another in one industry is apt to be four-fifths as efficient in a very wide range of industries. Thus the opportunities for one country to secure and hold a large export trade by leadership and the advantages of specialisation seem to me to be less than they were.

Secondly, it was based on a relation between primary production and industry which in its extreme form I believe to have been temporary. There are signs that the forces which enabled us to benefit from the favourable terms of trade between manufacturing and primary production are working themselves out. The shift of resources from primary production in North America has been on such a scale that United States agriculture has fallen from a share of 65% of the occupied population in 1850 to 29% in 1920 and to 16% in 1950. In North-western Europe as a whole the proportion in agriculture has fallen from 26% in 1920 to 19% in 1950. In Asia and in South America also there has been a very marked increase in industrial activity. Thus it is not only the high levels of activity and consequent demand for primary products in recent years which, despite the continuance of the rapid upward trend of productivity in primary production, have reversed the trend of the terms of trade. The movement out of primary production and into industry consequent upon the powerful incentives of the 1930s has also, I think, contributed largely and more permanently. The ratio of the value of production per head in agriculture to the value of production per head in industry is now almost everywhere much more favourable to agriculture than it has been for a generation. The prosperity of British agriculture in the past few years has been not solely, or even predominantly, the result of subsidies and other political favours; they have shared in the general recent prosperity of all primary producers everywhere.

For these reasons I believe that we are progressively moving into a world in which the advantages of our nineteenth-century structure in its extreme form will be less than in the past. I believe that by degrees, and under the pressures of the ordinary market forces, we must expect and be prepared to adjust ourselves to an import ratio a little nearer to that of Germany than that of to-day, and to the adjustment of the pattern of activity that may go with it. I have no desire to accelerate any necessary transition

beyond the pace that changing world conditions may require; least of all have I any desire to lead the United Kingdom into uneconomic autarky.

But I am anxious lest an undue conservatism may regard the structure of fifty years ago as not only the ideal of that period but also the ideal for the present, and so resist structural change at the pace at which it may be necessary. For, as I see it, conservatism in these things may lead us to seek to preserve an unsuitable structure by taking measures to secure a balance of payments on current account of which the short-term effect is to reduce imports by reducing activity. By such measures we may well forfeit through reduced activity, and through reduced capital formation and reduced growth of productivity, considerably more than we gain at the margin by better international division of labour.

After such dramatic changes as have occurred as the result of the two wars of this century it is inevitable that our economy should require greater and more rapid change than if events had moved more smoothly and continuously. What we know least of all in the whole field of economics is the limits of practicable rates of change. We know how fast—or rather how slowly—the pattern has in fact changed over the past century. But we do not know just how fast it can be made to change by normal price incentives. These incentives will work in two ways; modifying the pattern of consumption through the change of relative prices, and modifying the pattern of production through the change of incentives. But there can be no question that large structural change requires considerable time. It requires a change in the pattern of our fixed capital, of our skills and of the geographical and industrial distribution of the working population. In some cases the required structural change can be facilitated by a change in the pattern of imports and their ratio to national income as different types of resources but relatively more or less scarce. But any large scale resort to this solution requires the expansion of exports, and that may well be the critical factor in all our problems.

In war-time, when very rapid structural change is essential, we have been accustomed both to accelerate the change and to diminish its immediate necessity by the twin operations of controlling the use of resources and rationing forms of final consumption involving resources which are temporarily scarce. My own fear is that events may continue to require us to make changes faster than a free and smoothly working economy can easily carry them through. It is for a willingness to face the

necessities and implications of change when they come, and to foresee them and to be prepared for them before they come, that I would plead.

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TABLE I

The Dependence of the British Economy on Imports

Year.	Population of United Kingdom,[1] millions.	Approximate ratio of retained imports to net national income at factor cost,[2] %.
1688	7·4	5½
1820	20·9	12
1850	27·4	18
1870	31·5	28
1880	34·9	33
1900	41·5	26
1913	45·8	28
1937	47·3	21
1951	50·2	32
1953	50·4	26

[1] For 1688 I have taken Gregory King's estimate, since I am using his national income and import estimates. For England (meaning, as is made clear, England and Wales) he estimates 5·5 millions; he says that, "Scotland and Ireland are . . . not ⅔ths of England in number of people." He goes on to say that, "England, Scotland and Ireland together contain . . . somewhat more than 7 millions of people." I have taken the mean between 7·0 millions and 7·7 millions. All other figures down to 1900 from the Census of the following year. Figures for isolated years since 1900 are mid-year estimates. The figures for 1937, 1951 and 1953 refer, as does the national-income estimate, to the area now defined as the United Kingdom, *i.e.*, excluding Eire; the figures for earlier years include what is now Eire.

[2] Estimates of Net National Income at Factor Cost from A. R. Prest, "National Income of the United Kingdom 1870–1946," ECONOMIC JOURNAL, March 1948, pp. 31–62, continued with help of official estimates. Earlier estimates of national income based on material from Colin Clark, *Conditions of Economic Progress*, and A. L. Bowley, *British Overseas Trade, 1700–1930*. Retained imports as revalued for earlier years by A. H. Imlah, *loc. cit.*

TABLE II

Percentage Distribution of the Occupied Population of England and Wales

	1821.	1831.	1951.
Agriculture and Fishing . . .	34·0	28·6	5
Trade, Manufactures and Handicraft .	46·5	42·2	60
Others, not employed in above . .	19·5	29·2	35
	100	100	100

Note: The figures for 1951 represent only a rough guess of the orders of magnitude of the similar categories to-day.

TABLE III

Percentage Distribution of the Occupied Population of England and Wales, 1841–1951

	1841.	1851.	1861.	1871.	1881.	1891.	1901.	1911.	1911.	1921.	1931.	1951.
Agriculture and Fishing	21·6	21·4	18·2	14·2	12·4	10·3	8·5	8·1	7·8	6·8	5·6	4·7
Manufacturing	28·9	32·9	32·6	30·2	29·9	29·6	29·1	29·0	29·9	31·2	30·0	34·1
of which :												
Textiles and Clothing	19·0	22·2	20·6	18·1	17·2	16·4	14·1	13·4	13·7	11·4	10·7	7·7
Metals, Machinery, etc.	5·5	6·1	7·2	7·3	7·7	7·8	9·1	9·7	9·8	12·8	11·6	17·5
Other manufacturing	4·3	4·6	4·7	4·8	5·0	5·4	5·9	6·0	6·4	7·1	7·7	8·9
Manufacture of Food, Drink and Tobacco	1·5	1·7	1·6	1·6	1·7	1·9	2·2	2·4	2·9	3·1	3·3	3·3
Mining and Quarrying	3·3	3·9	4·2	4·2	4·6	5·0	5·5	6·3	6·9	7·5	6·4	4·4
Building, Decorating, Contracting	5·4	5·0	5·3	5·7	6·3	5·7	7·1	5·8	5·3	4·4	5·6	6·2
General Labourers	5·8	4·1	3·4	4·9	5·0	4·7	2·9	1·8	1·5	—	—	—
Transport and Communications	3·0	5·4	6·2	6·6	7·6	8·4	9·7	9·5	6·9	7·0	6·8	7·7
Commerce, Finance and Distribution	4·8	5·3	6·0	6·8	7·2	7·9	9·0	10·5	13·2	13·2	15·5	13·8
Personal Service	19·2	14·6	15·6	16·6	16·1	16·3	14·6	14·1	15·1	11·8	12·8	7·5
Central and Local Government Employment	1·3	1·5	2·0	1·9	1·9	2·1	2·6	3·1	4·4	6·5	6·6	8·2
Residual	5·2	4·1	4·9	7·3	7·3	8·2	8·9	9·3	6·0	8·4	7·5	10·2

Source: 1841–1931: Census of Population, Occupation Tables; 1951: 1% Sample Tables.

Figures for years prior to 1911 should be compared with those in the *first* column for the year 1911, and those in the *second* column of the year 1911 should be used for comparison with 1921–51. This break is rendered necessary by a changed method of classification introduced in 1911. Prior to that year the classification had been a mixed industrial and occupational one. In 1911, in addition to the main tables on the old mixed classification, there appeared tables on an industrial classification. But it was not until 1921 that there appeared a complete separation of the classification into an industrial one and an occupational one. The 1921 General Report commented that this involved a very substantial change. For this reason no significance should be attributed to small changes between 1911 and 1921.

From 1911 onwards the industrial classification has been used. This is not only more useful from an economic standpoint, but is also to be preferred from the point of view of comparability. The 1921 General Report commented that although the classification prior to 1911 was a mixed one, yet it was largely industrial in nature, with only a few general occupational headings. This was so even after 1881 when certain occupations, such as clerks or porters, which should formerly have been classed to the separate manufacture or trade with which their work was connected, were collected together under general headings. That this change probably did not destroy the comparability of the figures before and after 1881 is apparent when the numbers in these affected occupations in 1871, 1881 and 1891 are compared.

Table III is based in the first instance on a comparative table for 1881–1921 reprinted in the 1921 General Report and originally prepared at the request of the Balfour Committee. This table has been extended forwards and backwards by adjusting the classification in other censuses to conform with that on the table. The odd general occupational groups which exist prior to 1911 are where possible allocated to their most appropriate industrial group, *i.e.*, carmen are put in transport. Where this is not possible, as in the case of clerks, they are omitted and included in the residual group.

The separation of distribution from manufacturing was not effectively carried out until 1911, though in 1901 it was nearly complete. The censuses prior to 1901 do permit, however, a high degree of separation. For most manufacturing groups the proportion of those engaged in wholesale and retail distribution in 1911 for which separate figures are available in earlier censuses is in the region of 90%. The principal exception is the group concerned with distributing the products of the textile and clothing industries. In this case separate figures exist in earlier censuses for only about three-quarters of those engaged in distributing these products in 1911. This incomplete separation of manufacture and distribution prior to 1901, sizeable only in the case of textiles and clothing, affects the comparison of figures before and after 1901. Prior to 1901, particularly in the case of textiles, the manufacturing figures will be a little higher than they should be and the distribution figure rather lower.

The residual in the table is composed principally of those engaged in professions (by far the most important), public utilities, entertainments and sport.

Down to 1911 the Census authorities were improving their classification in minor respects, and by degrees indefinite classes, such as general labourers, were absorbed into their appropriate classifications without substantial change of the character of activity. This will somewhat affect the comparability of such groups as building.

The preparation of this Table, in addition to much other assistance throughout the article, I owe to Mr. G. D. Garton of the Department of Applied Economics, Cambridge University.

TABLE IV

Composition of the United Kingdom Exports

Year.	Manufactured exports as percentage of total exports.	Textile exports as percentage of total exports.	Metal and engineering exports as percentage of total exports.	Coal exports as percentage of total exports.
1830	91	67	11	1
1850	93	63	18	2
1870	91	56	21	3
1890	86	43	25	7
1913	79	34	27	10
1937	78	24	35	7
1951	88	19	49	1

Note: Manufactured exports correspond to Class III: Textile exports are broadly III, I, J, K, L, and part of III, U, (1951 classification); *i.e.*, they exclude clothing. Metal and engineering exports are broadly III, C, D, E, F, G, S, and part of III, U. Coal exports are II, A. Prior to 1913 the alphabetical list has been put on a classification as close as possible to that of 1913–51.

TABLE V

Composition of United Kingdom Imports

	1820.	1850.	1870.	1900.	1913.	1929.	1933.
Food and Livestock . .	31	34	35	42	37	40·5	46
Of which: Grain . .	4	10	9	9	9	7	8
Raw Materials . . .	60	59	50	39	43	39·5	41
Of which: Textile Materials . . .	24	32	28	16	17	11	13
Finished Manufactured Goods . . .	9	7	15	19	20	20	13
Total . . .	100	100	100	100	100	100	100

Note: The analysis given above is derived from the work of Werner Schlote, *British Overseas Trade from 1700 to the 1930s* (translation by W. H. Chaloner and W. O. Henderson, Blackwell, 1952). He has attempted to distribute the recorded imports according to the Brussels international classification, and has revalued the imports for the purpose of calculating volumes and the prices of a series of base years and has then linked the separate series. While the latter process is irrelevant to my immediate problem, I have used his material, since it gives a convenient and constant set of classifications and enables me to go back to 1820. But a reader should be warned that the relative values of different products underlying this table are those that emerge from Schlote's work (*vide op. cit.*, pp. 27–30), and which Schlote calls "quantities at base year prices." Since Schlote's analysis ends at 1933, the comparison cannot be extended into the post-war period.

TABLE VI

Ratio of Productivity in Agriculture to Productivity in Industry

	1870.	1900.	1913.	1937.
United Kingdom	1·07	0·93	0·80	0·60
United States	0·52	0·44	0·39	0·39
Canada	0·96	0·63	0·43	0·27
Australia	—	—	1·39	1·41
New Zealand	—	—	1·38	1·09
Argentine	—	—	—	2·12
Germany	—	—	0·60	0·48
France	2·0	—	0·77	0·59
Denmark	—	—	—	0·49

Note: The above table is derived from estimates made by Mr. Colin Clark in *The Conditions of Economic Progress*. The underlying figures are calculated by him in his "international units," and are therefore at the relative prices of 1925–34 and not at current relative prices. The output of agriculture is valued at world prices, and does not reflect the special advantages or protection available to domestic agricultural producers. The ratios are—it should be emphasised—the result of comparing *average* productivity in industry with *average* productivity in agriculture; the ratios of the *marginal* productivities may be appreciably different.

INCREASING PRODUCTIVITY, INCOME–PRICE TRENDS AND THE TRADE BALANCE

Of the many factors which have been discussed in the attempt to provide a theoretical explanation of chronic balance-of-payments disequilibria in general, and a meaningful concept of "dollar shortage" in particular, those centring on the "dynamic" problems associated with the high rate of increase of American productivity have tended to find increasing favour in recent years.[1] Such explanations of chronic disequilibrium are of two sorts.[2] On the one hand, there is the argument that American money income rises less rapidly than productivity, so that American prices fall and the outside world is obliged to choose between secular deflation and secular depreciation (or between periodic deflations and periodic devaluations); on this line of argument chronic disequilibrium is a problem of monetary adjustment. On the other hand, there is the argument, elegantly formulated on a recent occasion by Professor Hicks,[3] that technical progress in the United States is strongly biased in favour of import substitutes, so that, apart from monetary complications, economic progress there imposes a real loss on the outside world;[4] on this

[1] The economists most notable for their early and sustained emphasis on this aspect of the dollar problem have been Thomas Balogh and John H. Williams. See Thomas Balogh, *The Dollar Crisis : Causes and Cure* (Oxford : Blackwell, 1949) and earlier articles mentioned therein; John H. Williams, *Postwar Monetary Plans* (Oxford : Blackwell, 1949) and *Economic Stability in the Modern World* (Stamp Memorial Lecture, November 1952).

[2] The high rate of increase of American productivity also plays a part in other explanations of dollar shortage, for example, that emphasising the instability of the American economy; but the latter argument seems to depend essentially on the high absolute level of American productivity rather than on its rate of change.

[3] J. R. Hicks, "An Inaugural Lecture," *Oxford Economic Papers*, N.S., Vol. 5, No. 2 (June 1953). Professor Hicks' argument is foreshadowed in Professor Haberler's contribution "Dollar Shortage?" in *Foreign Economic Policy for the United States* (Cambridge : Harvard University Press, 1948) edited by S. E. Harris, and in Honour Croome, "The Dollar Siege," *Lloyds Bank Review*, July 1950. See also Sir Dennis Robertson, *Britain in the World Economy* (London : Allen & Unwin, 1954), Ch. III.

[4] For a real loss to the outside world to result, technical progress in the United States must not merely be biased in favour of import substitutes, but sufficiently so to offset the favourable effects of progress in American export industries. Moreover, such import-biased progress could scarcely affect *all* the countries of the outside world adversely, since those which produced substitutes

line of argument chronic disequilibrium is basically a problem of real adjustment.

The purpose of this article is to throw some light on the logical implications of the first of these arguments, through an investigation of the relation between rates of increase of productivity and income–price trends or policies on the one hand, and the trend of the balance of trade on the other, in a highly-simplified two-country model of international trade.[1] Part I sets out the assumptions of the model and develops the basic equation required in the analysis; Part II analyses the effects of increasing productivity on the balance of trade, on the alternative assumptions that increasing productivity is reflected in proportionately rising money incomes or in proportionately falling prices; and Part III discusses the income–price policy necessary in one country to maintain equilibrium in its trade balance, given the income–price trend in the other country. Part IV sketches briefly the extension of the analysis required to deal with dynamic problems of balance-of-payments equilibrium. While the analysis employs mathematical techniques, these are of a type now familiar in this field, and their main use is to bring the relevant variables together in a systematic way. The more important conclusions bearing on the theory of dollar shortage are summarised in non-mathematical terms in Part V.

I. The Model

The analysis which follows is conducted in terms of a world of two countries, country 1 and country 2. In order to isolate the effects of increasing productivity, it is assumed that each country

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for American exports would enjoy a favourable movement of their terms of trade. Finally, import-biased progress might well be the result of other factors, such as delays by the outside world in making the necessary monetary adjustments, or the protectionist character of American commercial policy, rather than an independent feature of the American economy. For these reasons the hypothesis that American progress is import-biased does not impress the present writer as a satisfactory starting-point for analysis of the dollar problem.

[1] The use of a two-country model can be a legitimate tool of analysis in international trade theory, *provided* that it is clearly recognised that only one of the "countries" can be actually identified, the other "country" being the rest of the world; unfortunately there has been a tendency in the literature to apply the two-country model to the relations between the United Kingdom and the United States, a use for which it is clearly not appropriate. In the argument of this article, country 2 is taken to be the United States, and country 1 the rest of the world; some of the complications which arise in a many-country system are considered briefly in the Appendix.

has a fixed supply of labour,[1] which is kept continuously employed[2] in the production of a single good.[3] The output of this good (denoted by Y) is assumed to be increasing at the continuous rate $R\left(=\frac{1}{Y}\frac{dY}{dt}\right)$ determined by technical progress and capital accumulation;[4] the price per unit of the good (denoted by p), measured in an international monetary unit common to the two countries, is assumed to change at the rate $r_p\left(=\frac{1}{p}\frac{dp}{dt}\right)$, which may be positive, negative or zero; and the level of money income per head (denoted by w) changes at the rate r_w. By definition, $r_w = r_p + R$.[5]

Each country consumes a part of its output itself, and exports the remainder (denoted by X) to the other country in exchange for imports of the other country's product. Each country's demand for the other country's exports is assumed to be a function of two variables: its own output (which is identical with its income, valued in units of domestic product) and the price of its imports relative to the price of its own product. In symbols, $X_1 = f_2(\pi, Y_2)$ and $X_2 = f_1\left(\frac{1}{\pi}, Y_1\right)$, where $\pi\left(=\frac{p_1}{p_2}\right)$ is the price of country 1's good relative to the price of country 2's good. The

[1] To abstract from the effects of population growth.

[2] To abstract from problems of variations in effective demand, *inter alia*, variations induced by the changes in the balance of trade which are the object of study. Implicit in this assumption is the difficulty that, strictly interpreted, it means that changes in the trade balance are accurately forecast and offset by the economic authorities, and therefore are in some sense "planned." Such difficulties are ignored in what follows.

[3] The assumption that a number of goods are produced, unless hedged about by enough other assumptions to reduce it to equivalence with a single-good case, either introduces problems of re-allocation of production at varying real cost, which make the change in productivity in part a dependent variable, or, on the assumption of constant relative cost of all products, introduces awkward problems of discontinuity in international adjustment. There is also the difficulty that technical progress and capital accumulation will have differential effects on the relative costs of different goods.

[4] In a single-good model capital accumulation must take the form of employing larger stocks of the good in the production process. Capital accumulation, unless "neutral" in the Harrod sense, introduces problems of change in the proportion of current output devoted to investment, and both it and technical progress may involve changes in income-distribution, which may influence the demand for imports. Such complications are ignored here; for a discussion of some of the problems in a closed economy, see Joan Robinson, "The Production Function and the Theory of Capital," *Review of Economic Studies*, Vol. XXI (2), No. 55, pp. 81–106.

[5] By definition, $w = \frac{pY}{L}$ where L is the (fixed) quantity of labour. Hence $\frac{1}{w}\frac{dw}{dt} = \frac{1}{pY}\left(p\frac{dY}{dt} + Y\frac{dp}{dt}\right) = R + r_p$.

income elasticity of a country's demand for imports is denoted in what follows by ϵ

$$\left(\epsilon_1 = \frac{Y_1}{X_2}\frac{\partial X_2}{\partial Y_1},\ \epsilon_2 = \frac{Y_2}{X_1}\frac{\partial X_1}{\partial Y_2}\right)$$

and the price-elasticity of its demand for imports by η

$$\left(\eta_1 = \frac{\pi}{X_2}\frac{\partial X_2}{\partial \pi},\ \eta_2 = -\frac{\pi}{X_1}\frac{\partial X_1}{\partial \pi}\right)^1$$

We may now proceed to analyse the behaviour of the balance of trade between the two countries over time. Before doing so, however, it is necessary to define more precisely the problem in which we are interested, and in particular to choose a criterion for an improvement or deterioration in country 1's trade balance with country 2. Broadly speaking, there are two alternative criteria to be considered, each of which corresponds to a distinct conception of the dollar problem. On the one hand, in conformity with the practice of the modern theory of exchange adjustment, we may measure country 1's trade balance in terms of international currency, and define an improvement in its trade balance as a decrease in the (international currency) value of its trade deficit, or an increase in the value of its trade surplus. This would involve conceiving of the dollar problem in terms of the current-account deficit of the rest of the world with the United States, measured in gold. On the other hand, we may measure country 1's trade balance as a fraction of its imports, and define an improvement in its trade balance as a decrease in the ratio of its import surplus to its imports, or an increase in the ratio of its export surplus to its imports.[2] This would imply conceiving of the dollar problem in terms of the proportion of the imports of the rest of the world from the United States not paid for by exports to the United States.

The first alternative provides a monetary criterion of improvement, and the second provides a " real " criterion of improvement. Unfortunately, except in the case in which trade is initially

[1] Although these elasticities are defined with reference to a change in the relative price of imports, they will be identical with elasticities defined with reference to a change in the absolute price of imports, the price of the home good remaining unchanged, since (on the usual assumption of homogeneous demand functions of zero degree in prices) an equi-proportional change in both prices will leave the quantity demanded unchanged. For the same reason a rise in the price of the home good will have the opposite effect on quantity demanded to that of an equi-proportional rise in the price of imports, so that η_1 can be expressed in terms of π, as in the text. This footnote was suggested by a comment from Mr. I. F. Pearce.

[2] Alternatively, the trade balance could be measured as a fraction of the country's exports.

balanced, an improvement or deterioration on one criterion may not be an improvement or deterioration on the other : a doubling of commodity prices, for example, would double the money value of a deficit or surplus but leave the " real " deficit or surplus unchanged. Nor is there any compelling economic reason for preferring one criterion to the other, since in different contexts we may be interested in either the money balance or the " real " balance, according, for example, to the assumptions made about the source of financing of the balance.

There are, however, two considerations which suggest the adoption of the second criterion in preference to the first.[1] One is that the " real " balance is the more fundamental, and that changes in its money value arising from general movements in prices are more appropriately treated as gains or losses in purchasing power on capital account.[2] The other is that adoption of the second criterion both permits a more satisfactory dynamic formulation of the problem and greatly simplifies the argument. Consequently, the second criterion is adopted here, though the first criterion is developed at various points in footnotes.

The behaviour of a country's " real " balance over time is most conveniently studied through the ratio of the value of its exports to the value of its imports. An increase in this ratio, which is referred to henceforward as " the export ratio," means an improvement in the country's real balance, and vice versa.

Country 1's export ratio is defined as $T_1 = \frac{p_1 X_1}{p_2 X_2} = \frac{\pi X_1}{X_2}$. Differentiating this by t, and using the symbols defined above, we obtain

$$\frac{dT_1}{dt} = \frac{1}{X_2^2}\left\{X_2\left(X_1\frac{d\pi}{dt} + \pi\frac{\partial X_1}{\partial \pi}\frac{d\pi}{dt} + \pi\frac{\partial X_1}{\partial Y_2}\frac{dY_2}{dt}\right) - \pi X_1\left(\frac{\partial X_2}{\partial \pi}\frac{d\pi}{dt} + \frac{\partial X_2}{\partial Y_1}\frac{dY_1}{dt}\right)\right\}$$

$$= \frac{\pi X_1}{X_2}(r_\pi - \eta_2 r_\pi + \epsilon_2 R_2 - \eta_1 r_\pi - \epsilon_1 R_1)$$

where $r_\pi = \frac{1}{\pi}\frac{d\pi}{dt}$. Substituting for $r_\pi (= r_{P_1} - r_{P_2})$, and defining $R_{T_1} = \frac{1}{T_1}\frac{dT_1}{dt}$, this becomes

$$R_{T_1} = (\eta_1 + \eta_2 - 1)(r_{P_1} - r_{P_2}) + \epsilon_2 R_2 - \epsilon_1 R_1 \quad . \quad (1)$$

[1] The original draft of this article argued entirely in terms of the money balance. The present version owes much to comments from Mr. R. F. Harrod, Professor Milton Friedman, Dr. M. R. Fisher and Mr. A. Asimakopulos.

[2] I am indebted for this argument to Professor Friedman.

This last expression is our basic analytical equation : [1] it expresses the rate of change of country 1's export ratio, as a function of the rates of change of prices and the rates of change of productivity in the two countries.[2]

As a guide to the subsequent argument, it may be noted that the right-hand side of the equation falls naturally into two parts. The first expresses the influence of the price-trends, which depends on their relative magnitudes and on whether the sum of the two elasticities of demand for imports is greater or less than unity. The second expresses the influence of the productivity trends, which depends on their relative magnitudes and on the income-elasticities of demand for imports.

II. Income and Price Stability and the Trade Balance

The equation derived in the previous part expresses the general relation between the trade balance (in the form of the export ratio) and price and productivity trends. In this section we deal with the four particular cases which are suggested by the consideration that, either as a matter of policy or as a consequence

[1] Country 1's trade balance, measured in international currency units, is $B_1 = p_1X_1 - p_2X_2$. The equation for its change over time, found by differentiation of B_1 by t, may be expressed as

$$R_{B_1} = \left(\frac{1}{p_1X_1}\frac{dB_1}{dt}\right) = b_1r_{p_1} + \left(\frac{\eta_1}{T_1} + \eta_2 - 1\right)(r_{p_2} - r_{p_1}) + \left(\epsilon_2R_2 - \frac{\epsilon_1R_1}{T_1}\right) \qquad (1a)$$

where $b_1 = \dfrac{B_1}{p_1X_1}$. It should be noted that in contrast to the definitions of rates of change employed in the text, the definition of R_{B_1} here is merely a convention employed to simplify the right-hand side of the equation.

The equation is most easily understood as follows. The first term on the right-hand side expresses the fact that an equi-proportional change in both prices would alter the money value of a given real deficit or surplus proportionally. The coefficient of the second term is an analogue of the Hirschmann condition for devaluation to improve the trade balance when trade is initially unbalanced (see A. O. Hirschmann, " Devaluation and the Trade Balance : A Note," *Review of Economics and Statistics*, February 1949), and reflects the fact that, with initially unbalanced trade, the criterion for a price reduction (devaluation) by country 1 to improve its (foreign) balance involves a *weighted* sum of the elasticities of international demand. The third term expresses the fact that, if trade is initially unbalanced, an equi-proportional expansion of each country's imports would alter the money balance.

When trade is initially balanced, the equation for the change in the money balance reduces to the equation given in the text for the real balance. The simplification achieved by consideration of the real rather than the money trade balance might usefully be extended to the whole theory of exchange adjustment.

[2] The equation could be cast in terms of the rates of change of money income per head, rather than of prices, by use of the relationship $r_w = r_p + R$; but the resulting expression is much more cumbersome, and consequently is not introduced until the argument requires it.

of the working of economic forces, increasing productivity may result in a proportionately falling price level, aggregate money income remaining constant, or in proportionately rising money income, the price level remaining constant.

(a) *Constant Price Level in Both Countries*

On the assumption that the price level remains constant in both countries and money incomes rise proportionately to increasing productivity, $r_{p_1} = r_{p_2} = 0$, and the basic equation becomes

$$R_{T_1} = \epsilon_2 R_2 - \epsilon_1 R_1 \quad . \quad . \quad . \quad . \quad . \quad (2)$$

Country 1's trade balance turns more favourable or less favourable according to whether $\epsilon_2 R_2$ is greater or less than $\epsilon_1 R_1$; it will remain unchanged if these two expressions are equal.

A number of implications of this result are of interest. If productivity is not increasing in country 1, but is increasing in country 2, country 1's trade balance is bound to improve unless the commodity it produces is an inferior good in the consumption of country 2 (*i.e.*, unless ϵ_2 is negative); conversely, if country 1's productivity is increasing but country 2's productivity is not, country 1's trade balance is bound to deteriorate unless its consumers regard country 2's product as an inferior good.[1]

It does not necessarily follow, however, that when productivity in both countries is increasing the trade balance turns in favour of the country whose productivity is increasing at the slower rate, since the effect of a country's growth on its demand for imports depends on both its rate of increase of productivity and its income elasticity of demand for imports. Thus productivity may be increasing less rapidly in country 1 than in country 2, and the trade balance may turn against country 1, because country 1's income-elasticity of demand for country 2's goods is sufficiently greater than country 2's income-elasticity of demand for country 1's goods to offset the favourable influence of country 1's lower rate of growth.[2]

[1] Cf. Hicks, *loc. cit.*, p. 124. Henceforward the argument neglects the possibility of one country's product being inferior in consumption in the other country, and proceeds on the assumption of positive income-elasticities of demand for imports.

[2] In this case the change in the money balance is given by

$$R_{B_1} = \epsilon_2 R_2 - \frac{1}{T_1}\epsilon_1 R_1 \quad . \quad . \quad . \quad . \quad . \quad . \quad (2a)$$

If initially country 1 has a deficit ($T_1 < 1$) its money trade balance may turn against it, even though its demand for imports is growing less rapidly than country 2's demand for its exports ($\epsilon_1 R_1 < \epsilon_2 R_2$).

In terms of the dollar problem, this result would imply that if productivity increased faster in the United States than it did elsewhere, and if the United States (and the outside world) followed the policy of inflating money incomes proportionately to increases in productivity, a chronic dollar shortage would still be a possibility in consequence of an income-elasticity of foreign demand for American goods sufficiently higher than the American income-elasticity of demand for imports.[1] Such a dollar problem, however, would imply that the rate of increase of productivity in the United States was too low, not too high, relative to that in the rest of the world.

(b) *Price Constant in One Country, Money Income Constant in the Other*

Since the two cases in which price is constant in one country and money income constant in the other are symmetrical, only one of them need by analysed. We shall consider the case in which price is constant in country 1, and money income constant in country 2. In this case $r_{p_1} = 0$ and $r_{p_2} = -R_2$, and the basic equation becomes [2]

$$R_{T_1} = (1 + \epsilon_2 - \eta_1 - \eta_2)R_2 - \epsilon_1 R_1 \quad . \quad . \quad (3)$$

This equation indicates that country 1's trade balance is certain to turn adverse if $(1 + \epsilon_2 - \eta_1 - \eta_2)$ is negative; that is, if the sum of the two elasticities of international demand is greater than one plus country 2's income-elasticity of demand for imports. But country 1's trade balance may improve if the sum of the two

[1] Purely as an illustration, and without any commitment to their relevance or meaningfulness, we may refer to Chang's estimates of the income-elasticities of American demand for imports, 1·27, and of world demand for American exports, 2·917 (T. C. Chang, *Cyclical Movements in the Balance of Payments*, Cambridge, 1951, p. 148). These would imply a dollar problem of the kind described above, unless the United States grew 2·3 times as fast as the rest of the world; but both the estimates and their application here are so dubious that the exercise should not be taken seriously.

[2] The corresponding equation for the behaviour of the money balance is

$$R_{B_1} = (\epsilon_2 + \frac{1}{T_1} - \frac{\eta_1}{T_1} - \eta_2)R_2 - \frac{\epsilon_1 R_1}{T_1} \quad . \quad . \quad . \quad . \quad . \quad (3a)$$

and the condition for an improvement in country 1's money balance to be possible is that $\frac{\eta_1}{T_1} + \eta_2$ should be less than $\epsilon_2 + \frac{1}{T_1}$.

From the formula it follows that if country 1's demand for imports is inelastic ($\eta_1 < 1$) increasing productivity in country 2 accompanied by falling prices is more likely to improve country 1's money balance the larger is country 1's initial deficit or the smaller is its initial surplus (the smaller is T_1); but if country 1's demand for imports is elastic ($\eta_1 > 1$) the opposite conclusion follows.

price-elasticities is less than this critical sum; and it will improve if this condition is satisfied *and* R_2 is greater than

$$\frac{\epsilon_1 R_1}{\epsilon_2 + 1 - \eta_1 - \eta_2}$$

The explanation of these results becomes very simple if we neglect the effects of increasing productivity in country 1 and consider the effects of increasing productivity in country 2, accompanied by proportionately falling prices, on country 1's trade balance. These effects are of two kinds. First, increasing productivity in country 2 increases country 2's income, and therefore its demand for imports, through the income-elasticity of demand for imports; this effect tends to improve country 1's trade balance. Second, increasing productivity in country 2 by assumption lowers the price of country 2's goods, and so affects both countries' demands for imports. This effect may work either way: if the sum of the elasticities of international demand is less than unity, the trade balance turns in favour of country 1; if the sum of the elasticities is greater than unity, it turns in favour of country 2. For increasing productivity in country 2 to turn the trade balance against country 1, the sum of the elasticities of demand must be sufficiently greater than unity to outweigh country 1's income-elasticity of demand for imports. If productivity in country 1 is also increasing, and the price level there is constant, there is an unfavourable effect on country 1's trade balance through its increasing demand for imports which must also be considered.

The assumption that the price level is constant in country 1 and income constant in country 2 yields a model analogous to that assumed in the monetary explanation of chronic dollar shortage mentioned in the introduction to this article, if we identify country 2 with the United States and country 1 with the outside world; and the results just stated have some bearing on the theoretical arguments used to demonstrate the reality of "dollar shortage." In the first place, as we have shown, it is not necessarily true that if increasing productivity in the United States resulted entirely in falling prices, and increasing productivity elsewhere resulted entirely in rising money incomes, the trade balance of the United States would turn in its favour. In the second place, a favourable movement of the American trade balance arising from productivity-induced reductions in the prices of American goods would necessarily imply that the responsiveness of world demand to changes in relative prices was sufficiently high for monetary or

exchange-rate adjustments by the outside world to remedy the situation.[1]

This analysis points to a certain inconsistency between the argument that there is a persistent tendency towards dollar shortage because the United States does not inflate incomes sufficiently to keep pace with rising productivity, and the assertion sometimes found in close association with it that the elasticities of international demand are too low for devaluation against the dollar to have a favourable effect on the trade balance of the rest of the world with the United States. The latter assertion ought logically to carry with it the view that the greater the rate of increase in productivity and the less the accompanying inflation of incomes in the United States, the less serious will be the dollar problem of the outside world. The former argument, in so far as it stresses the rapidity of American progress, assumes that the elasticities of international demand are sufficiently high for devaluation against the dollar to be a successful policy.[2]

(c) *Money Income Constant in Both Countries*

On the assumption that money income remains constant in both countries and prices fall proportionately to the rate of increase of productivity, $r_{p_1} = -R_1$ and $r_{p_2} = -R_2$, and the basic equation becomes [3]

$$R_{T_1} = (\eta_1 + \eta_2 - \epsilon_1 - 1)R_1 - (\eta_1 + \eta_2 - \epsilon_2 - 1)R_2 \quad (4)$$

If both coefficients of the rates of growth are positive—that is, if the sum of the elasticities of international demand is greater than unity plus the higher income-elasticity of demand for imports—the trade balance turns towards or against country 1 according to whether R_1 is greater or less than $\frac{\eta_1 + \eta_2 - \epsilon_2 - 1}{\eta_1 + \eta_2 - \epsilon_1 - 1} R_2$. In

[1] While this argument relates to the real balance, it applies *a fortiori* to the money balance, if the United States is assumed to have an initial export surplus ($T_1 < 1$). Devaluation or deflation by the outside world would improve the outside world's dollar balance if $\frac{\eta_1}{T_1} + \eta_2 > 1$, whereas increasing American productivity with falling prices would worsen the outside world's dollar balance only if $\frac{\eta_1}{T_1} + \eta_2 > \epsilon_1 + \frac{1}{T_1}$.

[2] A dollar shortage could emerge under the postulated circumstances, even if the sum of the elasticities of international demand were less than unity; but it would be the result of increasing productivity in the rest of the world.

[3] The corresponding equation for the behaviour of the money balance is

$$R_{B_1} = \left(\frac{\eta_1}{T_1} + \eta_2 - \frac{\epsilon_1}{T_1} - 1\right)R_1 - \left(\frac{\eta_1}{T_1} + \eta_2 - \epsilon_2 - \frac{1}{T_1}\right)R_2 \quad . \quad (4a)$$

This gives the same qualitative possibilities as below, but the conditions demarcating the cases are more complicated.

this case, if country 1's income-elasticity of demand for imports is greater than country 2's, the trade balance must turn against it unless it is growing, and reducing its price level, more rapidly than country 2. If both coefficients are negative (the sum of the elasticities is less than one plus the lower income-elasticity of demand for imports) the trade balance turns towards or against country 1 according to whether R_1 is less than or greater than $\frac{\eta_1 + \eta_2 - \epsilon_2 - 1}{\eta_1 + \eta_2 - \epsilon_1 - 1} R_2$. In this case, if country 1's income-elasticity of demand for imports is greater than country 2's, its trade balance must turn against it unless it is growing less rapidly than country 2.

Finally, if one coefficient is positive and the other negative (the sum of the elasticities lies between one plus the lower and one plus the higher income-elasticity of demand for imports) the trade balance turns in favour of the country with the lower income-elasticity of demand for imports, regardless of the rates of growth. In this case if country 1 has the higher income-elasticity of demand for import its trade balance is bound to turn against it.

The complications of this analysis result from the fact that, by assumption, each country's growth has two effects on the trade balance, one operating through income and the other through relative prices. The effect of increasing productivity in lowering the price of its output may tend either to worsen or to improve its trade balance: if it tends to improve the trade balance, it may or may not do so sufficiently to offset the adverse effect through increasing income.

This case also has some relevance to the monetary version of the increasing-productivity explanation of chronic dollar shortage commented on in previous sections. One might reasonably argue that under modern conditions the most that a restrictive fiscal and monetary policy can be expected to do is to prevent an increase in money income, since an attempt to bring about an actual deflation of incomes would produce unacceptable political and economic strains; and that the alternative of devaluation or depreciation, if it becomes the long-run trend, has seriously adverse effects in the destruction of confidence in and generation of speculation against the currency.[1]

[1] These are admittedly Anglo-centric considerations. Also it should be emphasised that they are judgments about the limitations of monetary techniques of adjustment, the first of which implies an assumption of money illusion with respect to income. A deflation of money income does not necessarily entail a reduction of real income, under the posited circumstances, since productivity is assumed to be rising in both countries. The real income adjustment required

The argument presented in this section indicates that, even on the assumption that productivity rises faster in the United States than it does elsewhere, and that the whole of the impact of rising American productivity falls on prices, it does not necessarily follow that the rest of the world would be forced up against these politico-economic limits of monetary policy. This general problem is pursued further in the next part of the argument.

III. Consistent Income–Price Trends

The analysis presented in Part II was concerned with the behaviour of the balance of trade under alternative assumptions as to the response of prices and money incomes to the increase of productivity in the two countries. In this part we shall be concerned with a different problem, the trend of price and money income required in one country to prevent a change in its balance of trade, given the trend of price and money income in the other country as a datum.[1, 2]

Since the price and income trends in each country are related by the identity $r_w = r_p + R$, the essential problem can be solved by finding the price trend in country 1 required to prevent a change in its trade balance, given the price trend in country 2. This is accomplished by setting $R_{T_1} = 0$ in the basic equation, and solving for r_{p_1} as a function of r_{p_2}: the resulting equation is [3]

$$r_{p_1} - r_{p_2} = \frac{\epsilon_2 R_2 - \epsilon_1 R_1}{\eta_1 + \eta_2 - 1} \quad . \quad . \quad . \quad . \quad (5.i)$$

It is useful, however, to set out explicitly the alternative versions of the required relation between income–price trends in the two countries, which are:

$$r_{p_1} - r_{w_2} = \frac{\epsilon_2 R_2 - \epsilon_1 R_1}{\eta_2 + \eta_2 - 1} - R_2 . \quad . \quad . \quad . \quad (5.ii)$$

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by the preservation of the balance of trade is discussed in the next part of this article.

[1] A datum, in the sense either of the outcome of economic forces, or of an objective of economic policy; the distinction is illustrated in the ensuing argument.

[2] The analysis which follows assumes that the critical factor $\eta_1 + \eta_2 - 1$, which determines the direction of the effect of a change in relative prices on the trade balance, does not change sign over the relevant range of relative-price change. This assumption seems legitimate in the present context, though it might not be valid for problems involving a very large change in the trade balance, *e.g.*, the correction of a structural imbalance after a war; and the implication of the present section, that there is always *some* monetary adjustment which will preserve trade balance, should not be extended without further examination to such cases.

[3] The corresponding equation for the behaviour of the money balance is

$$r_{p_1} - r_{p_2} = \frac{b_1 r_{p_1} + \epsilon_2 R_2 - \epsilon_1 R_1 / T_1}{\eta_1 / T_1 + \eta_2 -} \quad . \quad . \quad . \quad . \quad (5.i.a)$$

$$r_{w_1} - r_{p_2} = \frac{\epsilon_2 R_2 - \epsilon_1 R_1}{\eta_1 + \eta_2 - 1} + R_1 \quad . \quad . \quad . \quad (5.\text{iii})$$

$$r_{w_1} - r_{w_2} = \frac{\epsilon_2 R_2 - \epsilon_1 R_1}{\eta_1 + \eta_2 - 1} + R_1 - R_2 . \quad . \quad (5.\text{iv})$$

These equations can be interpreted and applied in several ways, and a full investigation of their implications is ruled out by considerations of space. The analysis which follows is confined to distinguishing various ways in which the central problem can be posed, and illustrating the ways in which the equations can be applied.[1]

In the first place, it may be of interest to determine the relative rate of change of price or money income in country 1, as compared with that in country 2, which is required to prevent a change in the trade balance. Equations (5.i) to (5.iv) have been set out in the form most convenient for answering this question: the required rate of change of the country 1 trend-variable (price or income) will be (algebraically) greater or less than the rate of change of the country 2 variable shown on the left-hand side in each, according to whether the expression on the right-hand side is positive or negative. Thus (by equation (5.i)) the preservation of an unchanged trade balance requires that price in country 1 should rise more rapidly or fall less rapidly than price in country 2 [2] if $\frac{\epsilon_2 R_2 - \epsilon_1 R_1}{\eta_1 + \eta_2 - 1}$ is positive, and rise less rapidly or fall more rapidly than price in country 2 [3] if this latter expression is negative.

Secondly (and with more relevance to the dollar problem), it may be of interest to determine whether the preservation of the balance of trade requires an absolute deflation (negative rate of change) of price or income in country 1, given the rate of change of price or income in country 2. This sort of question is answered by transferring the country 2 trend-variable to the right-hand side of the relevant equation, and substituting its assumed actual value; if the resulting expression is negative, then an absolute deflation (of price or money income, as the case may be) is required of country 1. For example (equation (5.iv)), an absolute deflation

[1] The analysis can be extended to determine the rate of change of the exchange rate of either country which is required to prevent a change in the balance of trade, on the assumption that the rate of change of price or money income in terms of local currency is given in both countries, by making use of the relation $r_p = r_{p'} - r_q$, where $r_{p'}$ is the rate of change of domestic currency price and r_q is the rate of change of the country's exchange rate, defined as the number of units of local currency required to buy a unit of international currency.

[2] Or perhaps rise while price in country 2 is falling.

[3] Or perhaps fall while price in country 2 is rising.

of money income in country 1 will be required if $R_2 - R_1 + \frac{\epsilon_1 R_1 - \epsilon_2 R_2}{\eta_1 + \eta_2 - 1}$ is (algebraically) greater than the assumed rate of change of money income in country 2. This condition, it may be noted, will not necessarily be fulfilled, even if money income is actually falling in country 2 (r_{w_2} negative) and the rate of increase of productivity in country 2 is greater than in country 1, so that price is falling more rapidly relative to money income in country 2 than it is in country 1. In such circumstances, as equation (5.ii) indicates, it may not even be necessary for country 1 to deflate its price level, let alone its money income, to preserve an unchanged trade balance. On the other hand, in the opposite circumstances —a rising price-trend and a higher rate of increase of productivity in country 2 than in country 1—the preservation of the trade balance might require country 1 to deflate its money income (5.iii).

Thirdly, it may be of interest to determine the minimum rate of increase of money income or price in country 2 which is necessary to permit the trade balance to be preserved without country 1 being obliged to undertake a (secular) deflation of income or price.[1] This is simply another version of the previous type of question, and may be answered by setting the country 1 trend-variable equal to zero and solving for the country 2 trend-variable in the relevant equation. For example (equation (5.ii)), the minimum rate of increase of money income in country 2 required to enable country 1 to preserve the trade balance without a price deflation is

$$r_{w_2} = \frac{\epsilon_1 R_1 - \epsilon_2 R_2}{\eta_1 + \eta_2 - 1} + R_2$$

Since the right-hand expression can be negative, it may not be necessary for country 2 to inflate its income for country 1 to avoid a price deflation.

Finally, although the problem lies outside the scope of this article, equations (5.i) to (5.iv) can be used to throw light on the behaviour of country 1's real income over time, assuming that it follows whatever policy is required to prevent any change in its balance of trade.[2] Equation (5.i) determines the trend of country 1's commodity terms of trade: if its right-hand side is positive,

[1] The obligation here is to preserve the trade balance, not necessarily to prevent a deterioration of the balance; see the remarks below on the application to the dollar problem.

[2] In the following argument "real income" is identified with the purchasing power of money income; this means that, where trade is unbalanced, changes in the purchasing power of the associated "invisible" transfer are ignored. The terms of trade concepts employed are "net," not "gross." Strictly speaking, the argument here should be confined to the case of balanced trade.

country 1's terms of trade will move in its favour over time, and its real income will increase more rapidly than its productivity; if the right-hand side of the equation is negative, country 1's terms of trade will move against it over time, and its real income will increase less rapidly than its productivity. Equation (5.iii) determines the trend of the real value of country 1's income in terms of country 2's product—country 1's single-factoral terms of trade; if the right-hand side of the equation is positive, country 1's real income is necessarily increasing, since its money income will buy an increasing quantity of either good. If the right-hand side of the equation is negative, however, country 1's real income may be either increasing or decreasing, depending on whether or not the decreasing cost of producing its own good outweighs the increasing cost of obtaining country 2's good through exchange. The determination of the conditions under which country 1's real income falls absolutely involves an index-number problem which is beyond the scope of the present analysis.[1] Equation (5.iv) determines the movement of country 1's double-factoral terms of trade: if the right-hand side of this equation is positive, country 1's real income will rise more rapidly than country 2's. From this equation it is evident that the country with the higher rate of increase of productivity does not necessarily enjoy the higher rate of increase of real income.[2]

The application of results arrived at under the second and third heads above to the theoretical dollar-shortage problem requires a certain caution, since the equations do not distinguish between cases in which the elasticities of international demand are high enough for deflation (or devaluation) to improve the trade balance and those in which they are not, while the meaning of the solution of the equation is different in the two cases. If the sum of the elasticities is greater than unity, a value of the country 1 trend-variable higher than that indicated by the relevant equation would turn the trade balance against country 1: the solution of the equation is an upper limit, and the restriction it imposes on the country 1 trend is necessary to prevent an adverse movement in country 1's balance of trade. But if the sum of the elasticities is less than one, a value of the country 1 trend-variable higher than that indicated by the relevant equation would turn country 1's

[1] See H. G. Johnson, "Equilibrium Growth in an International Economy," *Canadian Journal of Economics and Political Science*, November 1953, pp. 495–6, for a criterion in the case of balanced trade.

[2] Real income being defined as in the last footnote but one; psychic comparisons are, of course, impossible without a value judgment precluded by the anonymity of countries 1 and 2.

trade balance in its favour: the solution of the equation is a lower limit, and the restriction it imposes on the country 1 trend is necessary to prevent an adverse movement in country 2's balance of trade.

The implication of these considerations for the theory of dollar shortage is that only on the assumption that the price-elasticities of American demand for imports and world demand for American exports are sufficiently high for devaluation against the dollar to improve the trade balance of the rest of the world with the United States can it be maintained that falling American prices resulting from rapidly increasing productivity force the rest of the world to choose between secular deflation and secular exchange depreciation. On the assumption of adverse elasticities, no price–income trend in the United States could force the latter choice, since any "dollar shortage" could be cured by sufficient inflation or appreciation against the dollar, and a deflationary trend in the United States would necessarily contribute to the cure.[1]

This explanation of dollar shortage therefore requires the assumption of sufficiently high elasticities of international demand for traditional monetary policies to be effective. But even on that assumption, the proposition that American incomes lag behind productivity and American prices tend to fall does not necessarily imply chronic dollar shortage. The analysis presented above and in Part II shows that the outside world would not necessarily have to deflate money incomes, or even prices, even if the whole increase in American productivity were absorbed in price reduction. On the other hand, however, the rest of the world might be obliged to follow policies of secular deflation of prices, and perhaps of incomes, even if money incomes in the United States grew faster than productivity, so that American prices rose.[2]

IV. Income–Price Trends and the Balance of Payments

Throughout the argument of the preceding three sections, we have been concerned with various aspects of the relationship

[1] The argument could, of course, be rescued by drawing a sharp distinction between short-run and long-run elasticities of international demand; or it could be stood on its head, and chronic dollar shortage be attributed to the failure of the United States to pursue a monetary policy sufficiently deflationary to enable the rest of the world to close its dollar gap without an intolerable rate of domestic inflation. Elements of the latter argument may be found in the literature of the post-war dollar problem, but not in a consistently developed form.

[2] Contrast Lionel Robbins, "The International Economic Problem," *Lloyds Bank Review*, January 1953, especially pp. 2–7, where this possibility is denied by implication.

between income–price trends and rates of increase of productivity on the one hand and the behaviour of the balance of trade on the other. Since balance-of-payments equilibrium or disequilibrium depends on the behaviour of the net balance of capital transactions as well as on the behaviour of the trade balance, it may be useful to indicate briefly how the analysis may be extended to consider the effects of increasing productivity and income–price trends on the overall balance of payments, exclusive of balancing items.

To do so, we introduce the symbol $C_1 = \left(\frac{G_2}{p_2 X_2}\right)$ to represent the ratio of the net flow (G_2, which may be positive or negative) of autonomous payments on capital account from country 2 to country 1 measured in international currency units, to country 1's purchases of imports from country 2—" the transfer ratio "; and we define $T_1' = T_1 + C_1$ as the ratio of the value of country 1's receipts from country 2 to the value of its purchases from country 2—" the receipts ratio." If $T_1' = 1$, country 1's balance of payments is in equilibrium, and if T_1' increases over time, country 1's balance of payments is improving.

The behaviour of country 1's receipt ratio over time is given by the equation [1]

$$R_{T_1'} = \frac{T_1}{T_1 + C_1} R_{T_1} + \frac{C_1}{T_1 + C_1} R_{C_1} . \quad . \quad . \quad (6)$$

where R in each case stands for the proportional rate of change over time of the subscripted variable. Unlike equation (1), this equation contains the initial values of exports, imports and capital movements, and can therefore, in general, be employed only with reference to a given initial position.

If the value of net capital transfers increases at the same rate as country 1's imports, $R_{C_1} = 0$ and $R_{T_1'} = \frac{T_1}{T_1 + C_1} R_{T_1}$; if it increases at the same rate as country 2's imports, $R_{C_1} = R_{T_1}$ and $R_{T_1'} = R_{T_1}$. In both these cases, which correspond to the assumption that one of the countries lends or gives to the other a constant fraction of its exports or imports, the receipts ratio changes in the same direction as the export ratio, and the analysis of the previous sections applies to the behaviour of country 1's balance of payments as well as its balance of trade. In other cases, the previous analysis can be extended to describe the behaviour of

[1] The corresponding equation for the behaviour of the money balance is $R_{B_1}{}^* = R_{B_1} + \frac{G_2}{p_1 X_1} R_{G_2}$, where $B_1{}^* = B_1 + G_2$, $R_{B_1}{}^* = \frac{1}{p_1 X_1} \frac{dB_1{}^*}{dt}$, $R_{G_2} = \frac{1}{G_2} \frac{dG_2}{dt}$ and R_{B_1} is as defined in Part I.

the balance of payments, or the relation between income–price trends required to maintain an unchanged balance of payments, by making use of equation (6).

The simplest way of doing this is to start from the alternative version of (6)

$$R_{T_1'} = \frac{T_1}{T_1 + C_1}\left(R_{T_1} + \frac{G_2}{p_1X_1}R_{C_1}\right)$$

Since we have been interested either in the direction of change, or in the conditions for no change to occur, only the bracketed term on the right-hand side is relevant. From it can be deduced, for example, that the relation between the price-trends of the two countries required to preserve an unchanged balance of payments between them is

$$r_{p_1} - r_{p_2} = \frac{\epsilon_2 R_2 - \epsilon_1 R_1 + \dfrac{G_2}{p_1X_1}R_{C_1}}{\eta_1 + \eta_2 - 1}$$

For certain problems the analysis can be carried further by substituting expressions in the rates of change of prices and productivity for R_{C_1}. For example, international loans or gifts might be assumed to increase at the same rate as money income in the lending country. On this assumption, $R_{C_1} = (\eta_1 - 1)(r_{p_1} - r_{F_1}) + (1 - \epsilon_1)R_1$ if country 1 is the lending country, and $R_{C_1} = \eta_1(r_{p_2} - r_{p_1}) + R_2 - \epsilon_1 R_1$ if country 2 is the lending country.[1] Alternatively, in the case of reparations payments of constant amount in international currency per unit of time,

$$R_{C_1} = \eta_1(r_{p_2} - r_{p_1}) - r_{p_2} - \epsilon_1 R_1.^{2}$$

The introduction of the variable R_{C_1} makes it possible to consider explicitly [3] another type of problem, the rate of increase of international capital movements relative to the value of trade which is necessary to maintain balance-of-payments equilibrium under various assumptions about income–price trends in the two countries. By setting $R_{T_1'} = 0$, in equation (6), we obtain the intuitively obvious result that, to maintain an unchanged balance of payments, the transfer ratio must change in the opposite direction to the export ratio if country 1 is a capital

[1] In the first case $C_1 = \dfrac{ap_1Y_1}{p_2X_2}$, and in the second case $C_1 = \dfrac{bp_2Y_2}{p_2X_2}$ where a is a negative and b a positive constant.

$$\frac{1}{p_1Y_1}\frac{d(p_1Y_1)}{dt} = r_{p_1} + R_1 \text{ and } \frac{1}{p_2X_2}\frac{d(p_2X_2)}{dt} = r_{p_2} + \epsilon_1 R_1 - \eta_1(r_{p_2} - r_{p_1}).$$

[2] In this case $C_1 = \dfrac{\bar{G}_2}{p_2X_2}$ where $\bar{G}_2$ is the fixed rate of reparations.

[3] The argument is, of course, implicit in the analysis of Parts II and III.

importer (C_1 positive) and in the same direction as the export ratio if country 1 is a capital exporter (C_1 negative). By substituting for R_{T_1} in this equation according to the assumed income–price trends, we obtain the rate of change of the transfers ratio required to maintain an unchanged balance of payments under the assumed conditions. On the assumption that initially the balance of payments is in equilibrium ($T_1' = 1$) this rate of change of the transfers ratio will maintain equilibrium. For example, the rate of increase of the transfers ratio required to maintain equilibrium with prices constant in both countries is

$$R_{C_1} = \frac{T_1}{C_1}(\epsilon_1 R_1 - \epsilon_2 R_2) = \frac{1}{-b_1}(\epsilon_1 R_1 - \epsilon_2 R_2)$$

where b_1 is the initial ratio of country 1's export surplus to its exports.[1] In the case in which country 1 is initially running a trade deficit (b_1 negative), this equation indicates, as one would expect, that the higher is the rate of increase of productivity in country 2 relative to country 1 the lower is the rate of increase of the transfers ratio required to maintain balance-of-payments equilibrium without a change in the terms of trade between the two countries. However, even with a higher rate of growth of productivity in country 2 than in country 1, an increase in the transfers ratio might be required if country 2's income-elasticity of demand for imports were sufficiently lower than country 1's.

These conclusions are obviously relevant to another aspect of the theory of dollar shortage, the contention that the maintenance of international equilibrium requires the United States to lend abroad on an increasing scale, and that the United States has a chronic tendency not to lend abroad on a sufficient scale to cover its structural export surplus. This contention obviously demands a judgment as to the degree of monetary or real adjustment which the rest of the world can or should be expected to make, and the assumptions selected in the above illustration are only one of the possibilities; but the argument of the preceding section suggests the general conclusion that the need for increasing American foreign lending or gifts cannot be deduced from productivity and income–price trends alone.

More detailed investigation of problems of international lending lies outside the scope of this article. In any case, it

[1] On the assumption of initial equilibrium, $G_2 = -b_1 \cdot p_1 X_1$. The corresponding equation for the required rate of change of the (international) money value of transfers is :

$$R_{G_2} = \frac{1}{-b_1}((1 - b_1)\,\epsilon_1 R_1 - \epsilon_2 R_2)$$

would be advisable to approach them with the aid of a rather different model, both because the concept of the transfers ratio ignores problems of amortisation and interest payments and because allowance for interest payments would require a distinction between output and income which is not made in the model employed here.[1]

V. Conclusion

This article has considered the relation between productivity and income–price trends on the one hand, and the balance of trade on the other, from a variety of points of view. In the process, a number of observations have been made about one theoretical explanation of dollar shortage, that which attributes dollar shortage to the effects of the rapid increase in American productivity in lowering the money prices of American goods relative to the prices of goods produced elsewhere. In concluding, it may be useful to restate the main points of our analysis which bear on this theory.

In the first place, it is necessary to recognise that increasing productivity in the United States affects the American trade balance in two ways, and not just one as this theory implies. In addition to its effect on relative prices of American and foreign goods, increasing American productivity raises American real income and therefore—unless American imports are inferior goods in American consumption—increases American demand for imports. By itself (that is, apart from its effects on relative prices) rapidly increasing American productivity is a factor working against and not towards the emergence of a dollar shortage of the kind described, and could only contribute to the creation of dollar shortage by increasing too slowly to offset the influence of increasing productivity in the rest of the world on the demand for American exports. Consequently, in so far as proponents of this theory emphasise the high rate of increase of American productivity *per se*, rather than its alleged effects on relative prices, their analysis is misleading or wrong.

Secondly, with regard to the effect of increasing American productivity on the relative prices of American and foreign goods, the assumption that relatively falling American prices turn the trade balance of the United States in its favour necessarily implies that elasticities of international demand are high enough for devaluation against the dollar to improve the trade balance of the rest

[1] Cf. H. G. Johnson, *loc. cit.*, Part I, which deals with some of the latter complications in connection with a related problem.

of the world with the United States.[1] Logically, a decrease in American prices relatively to prices in the rest of the world is equivalent to appreciation of other currencies against the dollar,[2] and if appreciation against the dollar worsens the trade balance of the outside world with the United States, depreciation against the dollar must improve it.

Nothing in the argument presented here, however, contradicts the proposition that productivity and price trends in the world economy may lead to a chronic dollar shortage of the type described. Indeed, our analysis points to a number of factors which might contribute to this result. Further, it should be emphasised that our argument has been concerned only with this one theory of dollar shortage, to the exclusion of other possible explanations. We have, for example, abstracted from problems of cyclical instability and chronic stagnation by proceeding on the assumption of the maintenance of full employment.

Finally, a general conclusion implicit in the analysis presented in the preceding sections should perhaps be stated explicitly. It has sometimes been suggested or implied that all would be well in the world economy if each country stabilised prices by allowing money incomes to expand proportionally to increases in productivity. Our analysis shows that there is no such simple rule which defines the long-run monetary policies required to maintain balance-of-payments equilibrium between growing economies under a regime of fixed exchange rates.

Appendix: The *n*-Country Case[3]

The foregoing argument has been conducted in terms of a two-country model, and its application is restricted to consideration of relations between one country and the rest of the world

[1] This conclusion is strengthened by the consideration that the theory assumes not merely that a relative decrease in American prices improves the American trade balance, but that it improves it by more than is required to offset the income-effect of the increase in productivity which is assumed to bring about the fall in prices.

[2] This is true of the "money" balance only on the assumption of initially balanced trade; but on the assumption of an initial American export surplus, a decrease in American prices has a less favourable effect than an increase in foreign prices on the American "money" trade balance, so that the conclusion just stated is strengthened.

[3] The argument of this Appendix owes much to a paper read by J. J. Polak and Ta-Chung Liu at the 1952 meeting of the Econometric Society on "The Stability of the Exchange Rate Mechanism in a Multi-Country System," and to the comments on it made by N. Georgescu-Roegen. The discussion is reported in *Econometrica*, Vol. 21, No. 3 (July 1953), pp. 468–70.

taken as a whole. In this appendix we shall discuss briefly the extension of the model to a world of n countries, each of which is assumed to produce a single good, the output of which is increasing at a given rate, and to consume its own and other countries' products in quantities determined by its own output (income) and the relative prices of the various goods.

On these assumptions, the export ratio of country i is

$$T_i = \frac{\sum_{j \neq i} p_i X_{ji}}{\sum_{j \neq i} p_j X_{ij}} \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad \text{(i)}$$

where X_{ji} is the quantity of exports from country i to country j and p_i is the price of country i's output in international currency units; and the basic equation for the behaviour of country i's trade balance over time is

$$R_{Ti} = \sum_j \left(\frac{p_j}{T_i} \frac{\partial T_i}{\partial p_j} r_j + \frac{Y_j}{T_i} \frac{\partial T_i}{\partial Y_j} R_j \right) \quad . \quad . \quad . \quad \text{(ii)}$$

where r_j and R_j are respectively the price and productivity trends in country j.

On differentiation and re-arrangement of terms this becomes

$$R_{Ti} = \sum_{j \neq i} (x_{ji}\eta_{ji.i} + x_{ji} - m_{ij}\eta_{ij.i})r_i - \sum_{j \neq i} m_{ij}\epsilon_{ij}R_i + \sum_{k \neq i} \sum_{j \neq i} (x_{ji}\eta_{ji.k} - m_{ij}\eta_{ij.k} - m_{ik})r_k + \sum_{k \neq i} x_{ki}\epsilon_{ki}R_k \quad . \quad \text{(iii)}$$

where $\eta_{ji.k}\left(= \frac{p_k}{X_{ji}} \frac{\partial X_{ji}}{\partial p_k} \right)$ is the elasticity of j's demand for i's good with respect to a change in the price of k's good; $\epsilon_{ki}\left(= \frac{Y_k}{X_{ki}} \frac{\partial X_{ki}}{\partial Y_k} \right)$ is the income-elasticity of k's demand for i's good; and $x_{ji}\left(= \frac{p_i X_{ji}}{\sum_{j \neq i} p_i X_{ji}} \right)$ and $m_{ij}\left(= \frac{p_j X_{ij}}{\sum_{j \neq i} p_j X_{ij}} \right)$ are the proportional shares of i's exports to and imports from j in i's total exports and total imports. This equation can be re-written more simply as

$$R_{Ti} = (1 - \bar{\eta}_{w.i} - \bar{\eta}_{i.w})r_i + \sum_{k \neq i} (\bar{\eta}_{w.k} - \bar{\eta}_{i.k} - m_{ik})r_k - \bar{\epsilon}_i R_i + \sum_{k \neq i} x_{ki}\epsilon_{ki}R_k \quad . \quad \text{(iv)}$$

where $\bar{\eta}_{w.i}\left(= - \sum_{j \neq i} x_{ji}\eta_{ji.i} \right)$ is the elasticity of the rest of the world's demand for i's exports with respect to a change in i's price and $\bar{\eta}_{i.w}\left(= \sum_{j \neq i} m_{ij}\eta_{ij.i} \right)$ is the elasticity of i's demand for imports with respect to an equi-proportional change in their prices,[1] both defined with the conventional change of sign;

[1] On the assumption that a rise in i's price has the same effect on i's demand for imports as an equi-proportional fall in all other prices.

$\bar{\eta}_{w.k}(= \sum_{j \neq i} x_{ji}\eta_{ji.k})$ is the elasticity of the rest of the world's demand for i's exports, and $\bar{\eta}_{i.k}(= \sum_{j \neq i} m_{ij}\eta_{ij.k})$ is the elasticity of i's demand for imports, with respect to a change in the price of k's good; and $\bar{\epsilon}_i(= \sum_{j \neq i} m_{ij}\epsilon_{ij})$ is the income-elasticity of i's demand for imports.

Equations (iii) and (iv) express the behaviour of country i's export ratio over time, as a function of price-trends (operating through own-price and cross elasticities of demand) and productivity-trends (operating through income-elasticities of demand) in the world economy. For brevity, we shall ignore the influence of productivity trends and consider only the influence of price trends, leaving the interested reader to pursue the analysis along the lines indicated for the two-country case.

On the usual assumption that an equi-proportional change in all prices would leave quantities demanded unchanged, equal price-trends in all countries would leave each country's export ratio unaltered: consequently, on this assumption the sum of the coefficients of the price-trend terms in equations (ii)–(iv) will be zero. Making use of this relationship, and ignoring productivity changes, equation (iv) may be re-written

$$R_{Ti} = (\bar{\eta}_{i.w} + \bar{\eta}_{w.i} - 1)(r_a - r_i) + \sum_{k \neq i} (\bar{\eta}_{w.k} - \bar{\eta}_{i.k} - m_{ik}) (r_k - r_a) \quad . \quad \text{(v)}$$

The term r_a can represent anything at all; but it can most usefully be employed either to represent the price trend in any one of the n countries, so that one of the price-trend terms can be eliminated,[1] or to represent any sort of average of price-trends in the various countries. For our purpose, the latter is the more interesting.

On the assumption that r_a represents the average trend of prices in the world economy, equation (v) exhibits the influence of price trends on country i's export ratio as the sum of two terms. The first is the effect on i's export ratio of the movement of country i's price level relative to the general level of world prices, which will be favourable if the sum of the elasticities of demand for its exports and its demand for imports is greater than one and its price level is falling relative to the world price level, or if the sum of the elasticities is less than one and its price level is rising relative to the world price level. The second term is the sum of

[1] For example, in a two-country world equation (v) reduces to

$$R_{T_1} = (\eta_1 + \eta_2 - 1)(r_2 - r_1)$$

(the price-trend term employed in the main argument of the article).

the effects on the export ratio of the deviations of the price-trends of other countries from the world trend: the net effect will be favourable if the goods whose prices increase relatively to the world price level are close substitutes for the product of country i in world consumption, so that a rise in their prices improves i's export ratio, and the products whose prices fall relatively to the world price ratio are remote substitutes for or complements to i's product in world consumption,[1] so that a rise in their prices would worsen i's export ratio; and vice versa.

This second term introduces complications not allowed for in the two-country model. To illustrate, assume that the sum of the elasticities of demand for country i's imports and exports is greater than unity; then, according to the two-country model, i's trade balance would necessarily improve if prices in the rest of the world rose relatively to the price of i's good. In the n-country model, however, this result need not hold if prices in the other countries, though increasing relatively to the price of i's good, are rising at different rates; and country i may have to deflate or devalue in order to preserve its trade balance, even though its price level is rising less rapidly than that of any other country. Conversely, if the sum of the elasticities is less than unity, and i's price level is rising faster than that of any other country, its trade balance may nevertheless turn adverse; but in this case deflation or devaluation would further worsen the situation.

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[1] The terms "substitute" and "complement" are employed here in the loose sense, and not in the technical sense defined by demand theory; nor is the argument intended to be rigorous.

THE 1948–49 AMERICAN RECESSION [1]

In this paper I shall attempt to prove that the most important cause of the 1948–49 American recession was a substantial fall in fixed investment which began in the early part of 1948.

The recent controversy in the Economic Journal about the causes of the recession may have been misleading.[2] Originally, Professor Hamberg listed three causes of the recession : " a decline in the ratio of total consumption to national income and a sharp decline in the rate of growth of consumption, a policy of monetary restriction carried out by the Treasury and the Federal Reserve System, and a sharp and abrupt decline in the country's merchandise export trade." [3] He concluded his argument by saying that the most important explanation of the recession is an underconsumptionist one. In their reply Messrs Bratt and Ondrechen consider Professor Hamberg exaggerated the role of consumer expenditure. They also say, " The most reasonable explanation of the decline in inventory investment is change in the price situation." [4] They allow that consumer demand may have played a part in reducing prices, but contend that there were other more important factors. These were : (1) the break in food prices which occurred in the early months of 1948 ; (2) declining liquid funds and restrictive monetary policies ; (3) reduced exports of key manufactured products ; and (4) " There were other expenditure streams which were important in reducing aggregate demand, and, consequently, in reducing inflationary pressures. Notable were the reductions which occurred in expenditure for construction and producers' durable equipment in the first half of 1949." [5] But, " a general deficiency of demand for construction at this time, however, is not indicated." [6] And, " Even though declines did occur in private expenditure for construction and

[1] In preparing this paper I have benefited considerably from helpful comments and suggestions of, as well as the interest shown by, Mr. N. Kaldor and Professor R. F. Kahn. I have also been helped by the comments of the assessor of the paper and by reading a communication upon the same subject by Mr. J. Grieve Smith of the Treasury. I alone am responsible for any errors and omissions.

[2] See D. Hamberg, " The Recession of 1948–49 in the United States," Economic Journal, Vol. LXII, pp. 1–14 (March 1952), and E. C. Bratt and J. P. Ondrechen, " The 1948–49 Recession Re-examined," Economic Journal, Vol. LXIII, pp. 98–103 (March 1953), with D. Hamberg, " A Rejoinder," pp. 104–110.

[3] *Loc. cit.*, p. 2.

[4] *Loc. cit.*, p. 102.

[5] *Loc. cit.*, p. 102.

[6] *Loc. cit.*, p. 103.

equipment, the fact that the decline was limited is of notable importance." [1]

This small influence allowed to fixed investment—and then only for a short period in the middle of the recession—is made even smaller in Professor Hamberg's rejoinder. After reaffirming his belief in the importance of the fall in the growth of consumption, especially of non-durables, he comments, " What decline in fixed investment outlays in the private sector of the economy did occur (during 1949, after the recession was well under way) may be assumed to have been largely of the induced variety, responding to the decline in aggregate output. But the very fact that the recession was minor and was largely confined to inventory investment, is *prima facie* evidence of the strength underlying the demand for the vast bulk of private fixed investment." [2]

In what follows I shall attempt to show that a different explanation of the recession is more plausible in the light of the statistical facts. First, while the inventories of durable goods manufacturers took little or no part in the general rise in inventories during 1948, during 1949 the fall of such inventories accounted for approximately two-thirds of the total fall. Secondly, the demand for durable goods which was related to the inventory cycle of durable goods manufacturers appears to have been mainly that of producers. Capital expenditures on non-farm plant and equipment started to fall in the second quarter of 1948, and by the last quarter of 1949 had fallen by 25%. Both inventories and purchases of durable goods fell. Thirdly, the decline in non-durable goods manufacturers' and in retailers' inventories in 1949 was negligible. Farm inventories fell. It is not argued that the cessation of inventory investment in these sectors was unimportant. On the other hand, it is suggested that the inventory cycle of durable goods manufacturers was distinct from the inventory cycle of the other sectors. Finally, it is difficult to establish a simple connection between the fall in the growth of consumption and the fall in fixed investment, because in several important manufacturing industries the fall in fixed investment occurred before the fall in the growth of consumption—which was very slight in any case—was apparent.

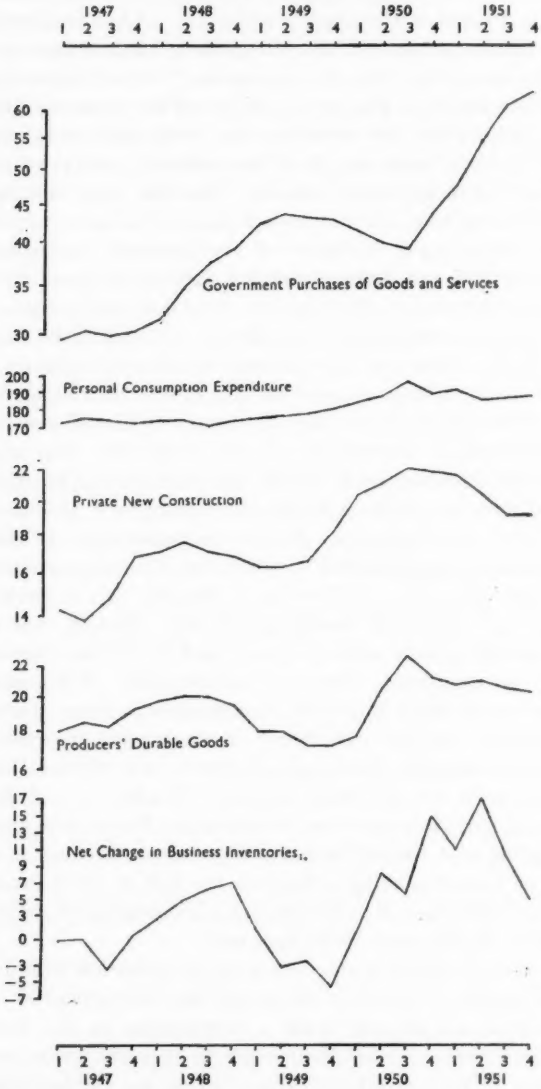
The main features of the course of the recession would appear to be as follows. The basic cause was the coincidence of a fall in private fixed investment with a downswing in the inventory investment cycle of non-durable goods manufacturers, retailers and farms. The lowered rate of production was further influenced

[1] *Loc. cit.*, p. 104. [2] *Loc. cit.*, p. 109.

CHART I

Components of Gross National Product ($ billion)

Seasonally adjusted at annual rates. Deflated and on ratio scale (except net change in business inventories).



Note : Scale for net change in business inventories differs from that for other series.

by the reduction in durable goods manufacturers' inventories, the main cause of which was the fall in fixed investment, although other causes, such as normal speculation over a fall in raw-material prices may have played a part. The recession was modified by the continued rise in consumption during 1949, the continued rise in public new construction during the same year, the relative stability of private new residential construction and the high rate of Government expenditures in the first half of 1949.

Messrs Bratt and Ondrechen's discussion appears to explain the non-durable goods manufacturers', retailers' and farm inventory cycle satisfactorily. The remainder of this paper examines the other factors in the recession and attempts to assess their importance. Attention will first of all be drawn to inventory changes. This particular approach to the problems of the recession, which is dictated by the nature of previous discussions, should not obscure the final object of the inquiry—the movements of demand and production.

The Inventory Fluctuations of 1948–49

There was a quarterly increase in total business inventories which rose from the fourth quarter of 1947 (1947 IV) to 1948 IV and fell in 1949 I (see Chart I). Thereafter inventories were actually reduced in 1949 II, III and IV. In 1950 I there was no

Table I

Change in Book Value of Inventories

($ million)

	1948.			1949.		
Manufacturers	—	—	2,750	—	—	−2,744
Durable goods industries	—	1,459	—	—	−1,770	—
Purchased materials	503	—	—	−1,038	—	—
Goods in process	199	—	—	−668	—	—
Finished goods	757	—	—	−65	—	—
Non-durable goods industries	—	1,291	—	—	−974	—
Purchased materials	47	—	—	−701	—	—
Goods in process	35	—	—	−125	—	—
Finished goods	1,209	—	—	−148	—	—
Retailers	—	—	1,818	—	—	−620
Durable goods	—	1,246	—	—	−294	—
Non-durable goods	—	572	—	—	−326	—
Wholesalers	—	—	369	—	—	−69
Durable goods	—	469	—	—	−32	—
Non-durable goods	—	−100	—	—	−37	—

Source: Business Statistics, 1953 Supplement, *Survey of Current Business*, p. 16; *Survey of Current Business*, March 1952, p. 7.

change, while in 1950 II inventories increased substantially. What sectors of business were affected? A break-up of inventory book value changes by sectors is shown in Tables I and II.

TABLE II

Percentage Change in Book Value of Inventories

	1948.			1949.		
Manufacturers . .	—	—	9·47	—	—	−8·63
Durable goods industries	—	10·23	—	—	−11·26	—
Purchased materials .	9·57	—	—	−18·03	—	—
Goods in process .	3·89	—	—	−12·56	—	—
Finished goods. .	19·45	—	—	−1·40	—	—
Non-durable goods industries . .	—	8·75	—	—	−6·07	—
Purchased materials .	0·64	—	—	−9·47	—	—
Goods in process .	1·65	—	—	−5·80	—	—
Finished goods. .	22·85	—	—	−2·28	—	—
Retailers . . .	—	—	13·60	—	—	−4·08
Durable goods . .	—	23·33	—	—	−4·46	—
Non-durable goods .	—	7·12	—	—	−3·79	—
Wholesalers . . .	—	—	4·85	—	—	−0·86
Durable goods . .	—	15·16	—	—	−0·90	—
Non-durable goods .	—	−2·21	—	—	−0·84	—

It is obvious that the largest inventory book value increases during 1948 were those of durable goods. In both manufacturing and retailing the difference between durables and non-durables is striking. Retailers' durable inventories increased by 23·3%, while retailers' non-durable inventories increased by 7·1%. The significance of the 1948 figures is, however, best seen in comparison with those of 1949. Manufacturers' inventories fell in value by almost five times as much as those of retailers, while those of durable goods manufacturers fell by almost twice as much as those of non-durable goods manufacturers. The percentage fall in durable goods is also almost twice as great as non-durables in manufacturing. But the difference between manufacturers and retailers is the most striking. It means that the reduction in manufacturers' inventories accounted for approximately 75% of the total fall in non-farm inventories during 1949, and the durable goods manufacturers for 50% alone.

However, changes in the book values need to be adjusted for stock appreciation or depreciation to obtain volume changes—net changes—which were the changes referred to in the introduction to this paper. Changes in volume are shown in Tables III and IV.

Comparison of these tables shows that whereas the inventories of all sectors increased during 1948, in 1949 almost the whole of the non-farm inventory fall occurred in the manufacturing sector.

TABLE III

Change in Volume of Inventories, 1948 (*Net Change*)

($ million)

	Change in book value.	Inventory valuation adjustment.	Change in volume.
Manufacturers	2,746	−1,532	1,214
Retailers	2,337	−587	1,750
Wholesalers	725	58	783
All other non-farm	355	−385	−30
TOTAL, NON-FARM	6,163	−2,446	3,717
Farm			1,312
TOTAL			5,029

Source: National Income, 1951 Supplement, *Survey of Current Business*, Table 33, p. 200.

In Tables V and VI the change in the volume of manufacturers' inventories is analysed.[1]

These calculations show a striking contrast between durables and non-durables. Whereas during 1948 durable goods inventories show a slight fall compared with a large rise for non-durables, during 1949 when non-durables inventories were approximately constant, durables were reduced considerably. In fact, almost the whole of the net change in manufacturers' inventories was located within the durable goods industries.

[1] The totals of the inventory valuation adjustment are those given in Tables III and IV. The sources give different totals for change in book value by sector, although for manufacturing the differences are slight, *i.e.*,

1948.

Table III	2,746
Table V	2,755 (based on seasonally adjusted data)
Table I	2,750

1949.

Table IV	−2,704
Table VI	−2,762 (based on seasonally adjusted data)
Table I	−2,744

Consequently, the total manufacturing change in volume obtained in Tables V and VI differs slightly from that in Tables III and IV. In Tables V and VI the change in book value and the 1949 inventory valuation adjustment figures are all those recently revised by the Department of Commerce. The 1948 inventory valuation adjustment figures have not recently been revised, although they are given by the Department as their official series.

TABLE IV

Change in Volume of Inventories, 1949 (*Net Change*)

($ million)

	Change in book value.	Inventory valuation adjustment.	Change in volume.
Manufacturers	−2,704	1,228	−1,476
Retailers	−762	725	−37
Wholesalers	−418	540	122
All other non-farm	−438	220	−218
TOTAL, NON-FARM	−4,322	2,715	−1,609
Farm			−873
TOTAL			−2,482

Source: *Survey of Current Business*, July 1953, Table 33, p. 24.

TABLE V

Change in the Volume of Manufacturing Inventories, 1948 (*Net Change*)

($ million)

	Change in book value.	Inventory valuation adjustment.	Change in volume.
Durable goods industries	1,398	−1,545	−147
Primary metals	566	−467	99
Fabricated metal products			
Electrical machinery	23	−252	−229
Non-electrical machinery	389	−427	−38
Motor vehicles	228	−210	18
Other transportation equipment	−61	−121	−182
Furniture and fixtures	12	−26	−14
Lumber	154	−9	145
Stone, clay, glass	87	−33	54
Non-durable goods industries	1,165	150	1,315
Food	−82	306	224
Tobacco	166	−64	102
Textile mills	198	−52	146
Apparel	73	1	74
Leather	0	46	46
Paper	91	−13	78
Chemicals	77	58	135
Petroleum	569	−132	437
Rubber	73	0	73
Not allocated	192	−137	55
TOTAL	2,755	−1,532	1,223

Source: (1) Changes in Book Value: 1953 Supplement, *Survey of Current Business*, pp. 19, 20, 21.
(2) Inventory Valuation Adjustment: 1951 Supplement, *Survey of Current Business*, Table 22, pp. 176–7.

TABLE VI

Change in the Volume of Manufacturing Inventories, 1949
(*Net Change*)

($ million)

	Change in book value.	Inventory valuation adjustment.	Change in volume.
Durable goods industries	−1,665	199	−1,466
Primary metals	} −410	164	−246
Fabricated metal products			
Electrical machinery	−284	−34	−318
Non-electrical machinery	−442	−63	−505
Motor vehicles	−287	72	−215
Other transport equipment	−103	−15	−118
Furniture	−29	35	6
Lumber	−73	40	−33
Stone, clay, glass	−37	0	−37
Non-durable goods industries	−926	974	48
Food	−98	177	79
Tobacco	3	−8	−5
Textile mills	−209	124	−85
Apparel	−143	74	−69
Leather	−29	17	−12
Paper	−120	99	−21
Chemicals	−185	339	154
Petroleum	−69	112	43
Rubber	−76	40	−36
Not allocated	−171	55	−116
TOTAL	−2,762	1,228	−1,534

Source: (1) Changes in Book Value: 1953 Supplement, *Survey of Current Business*, pp. 19, 20, 21.
(2) Inventory Valuation Adjustment: *Survey of Current Business*, July 1953, p. 19.

The experience of individual industries is interesting. The sequence of accumulation and decumulation of inventories in the clothing industries will be noted below, where the fall in exports during 1948 is mentioned. The fact that inventories in the motor vehicle industry showed little change during 1948 will be considered below when the state of consumers' demand for durables is discussed. But what appears to be the most impressive feature of the analysis shown in the tables is the substantial fall in the metals and machinery industries—a fall which had actually commenced, for machinery at least, during 1948.

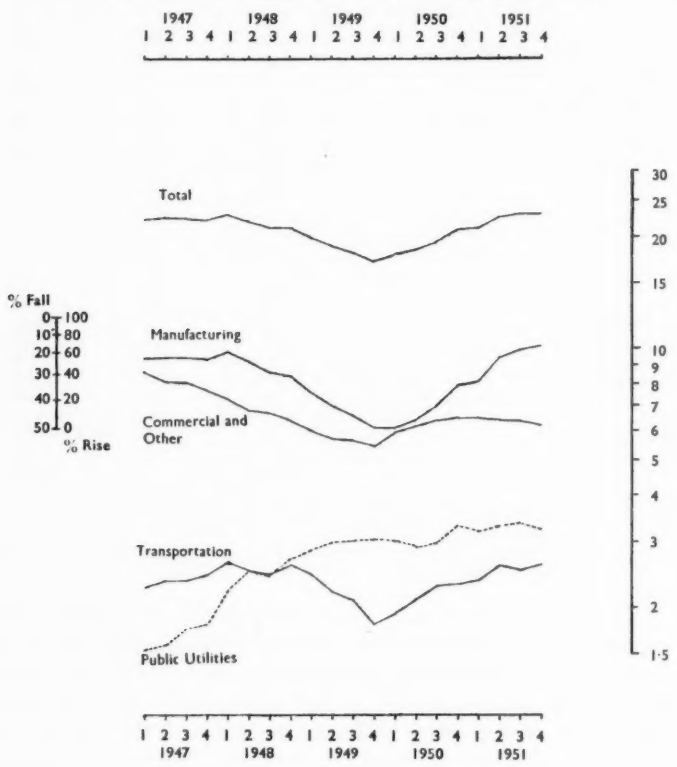
The tables presented above illustrate the cessation of inventory investment by retailers, non-durable goods manufacturers and farms during 1949. Attention was drawn to these features of the recession at the time, and has been drawn since. Here we shall

inquire into the changes in demand for durable goods—the products whose manufacturers made the largest inventory reductions during 1949.

CHART II

Business Expenditures on New Plant and Equipment ($ billion)

Seasonally adjusted at annual rates. Deflated and on ratio scale. (Excluding farm expenditure and outlays charged to current account.)



THE DEMAND FOR DURABLE GOODS

What explanation can be offered to explain the features of the inventory cycle discussed above? How did demand behave? The most striking feature about demand—and the most striking feature in the whole economy at the time—is that between 1948 I and 1949 IV total private, non-farm capital expenditures on new plant and equipment fell in real terms by 25% (see Chart II).

Total private new construction fell between 1948 II and 1949 III by 7%. Total expenditures on producers' durable equipment—including farm expenditures and outlays charged to current account—fell by over 14% between 1948 II and 1949 IV (see Chart I). These percentages and the data in the charts are based on deflated, seasonally adjusted, quarterly figures at annual rates.[1] The break-up of total capital expenditures is interesting (see Chart II). In manufacturing as a whole, capital expenditures declined by 38%. For the second largest group, "Commercial and other," [2] the decline was in progress as early as 1947 I, and altogether this sector's expenditures fell by almost 36%. For total transportation, a relatively minor group although it includes railroads, expenditures between 1948 I and 1949 IV fell by 32%. The expenditure of public utilities, also a small group, rose over the period.

These figures appear to be significant for various reasons. First, the fall in purchases of plant and equipment is substantial, not negligible. This fall is more obvious in the quarterly figures

[1] Capital expenditures on new plant and equipment includes both new construction and producers' durable goods. To it, to obtain total private fixed investment, need to be added private residential new construction, farm equipment and construction, and business outlays charged to current account. (For the relative magnitudes of these items see Table VII in the text.) The deflator used for capital expenditures on new plant and equipment was constructed from combining the Department of Labour wholesale price index of machinery and motive products with the Department of Commerce Composite Construction Cost Index, with weights of 61·2 and 38·8%, respectively. These were the relative proportions of the totals in constant 1939 $ of new construction and producers durable goods from 1947–49. (See 1951 National Income Supplement, *Survey of Current Business*, Table A, p. 146.) Ordinary three-monthly averages were taken for each quarter. Each index is on base 1947–49 = 100.

The deflators used in Chart I are as follows :

Producers' durable equipment : Department of Labour Wholesale Price Index of Machinery and Motive Products.

Private new construction : Department of Commerce Composite Construction Cost Index.

Personal Consumption expenditure : Department of Labour Consumer Price Index.

Government Purchases of goods and services : Department of Labour Consumer Price Index. (This is the least satisfactory of the deflations carried out.)

Sources of Charts I and II :

Gross national product components : 1953 Supplement, *Survey of Current Business*, p. 7; 1951 National Income Supplement, *Survey of Current Business*, Table 43, p. 207.

Capital expenditures on plant and equipment : *Survey of Current Business*, August 1952, Table 2, p. 21.

[2] "Commercial and other" includes commerce, construction and communications.

presented than in yearly totals. It is suggested that quarterly figures are most relevant because they do in fact show considerable quarterly changes, and because it is reasonable to suppose that the effects of such quarterly changes upon production and inventories—especially goods in process and stocks of raw materials—will be felt within periods shorter than a year. Secondly, the rise in public new construction—although it was substantial in 1949—was not great enough to offset the fall in private fixed investment. Unfortunately official quarterly seasonally adjusted figures of the subdivisions of total new construction are not available in the

TABLE VII

Gross Fixed Investment

(Constant 1947 $ billion)

	1947.	1948.	1949.
Private fixed investment . . .	32·0	34·1	31·0
Residential new construction (non-farm)	6·3	7·8	7·6
Farm producers' durable equipment .	1·5	1·9	2·0
Farm new construction . . .	1·4	1·4	1·4
Business producers' durable equipment .	15·1	14·2	11·4
Business new construction . . .	5·5	6·1	6·0
Other new construction (includes religious, entertainment, educational) .	0·6	0·9	1·1
Outlays charged to current account .	1·6	1·8	1·5
Public new construction	3·4	4·4	5·9

Sources:

New construction: 1953 Statistical Supplement, *Survey of Current Business*, p. 32.

Farm producers' durable equipment: *Survey of Current Business*, August 1953, Table 1, p. 18 (in constant 1947 $).

Business producers' durable equipment: *Survey of Current Business*, August 1952, Table 1, p. 20 (Capital Expenditures on Plant and Equipment less Industrial, Commercial and Public Utility New Construction).

Outlays charged to Current Account: *Survey of Current Business*, November 1953, Table 4, p. 17.

Deflators:

Producers' durable equipment: Department of Commerce Implicit Price Deflator for Producers' Durable Equipment, *Survey of Current Business*, November 1953, Table 7, p. 19. 1948 = 108·0, 1949 = 112·1.

New construction: Department of Commerce Implicit Price Deflator for Private New Construction, *Survey of Current Business*, July 1953, Table B, p. 27. Converted to 1947 base. 1948 = 110·2, 1949 = 108·4.

As is explained in the sources, the procedures used in estimating the various items in the table differ.

sources used. Nevertheless, the yearly totals, although they are as explained above not quite appropriate for the purpose, support the statement. These yearly totals are compared in Table VII. Thirdly, it seems that if price indexes measuring the changes in the costs of plant and equipment, different from the one actually

used, are employed as deflators, the conclusions are unaltered, although the magnitudes may alter. The peaks and troughs appear to be invariant to minor changes in the composition of the index. Fourthly, the fact that certain types of construction remained constant or actually rose during 1948–49—as did public new construction—does not lessen the importance of the fall in private fixed investment. In a short period of six months to a

TABLE VIII

Producers' Durable Equipment: New Orders and Shipments

Monthly Average

	Current prices.			1947 prices.[1]		
	1947.	1948.	1949.	1947.	1948.	1949.
Machine tools:						
Index of value of new orders	74·3	77·2	69·1	74·3	71·7	61·3
Index of value of shipments 1945–47 = 100	86·2	81·3	70·2	86·2	75·5	62·2
Foundry equipment:						
Index of value of new orders 1937–39 = 100	460·4	344·2	168·4	460·4	313·8	143·3
Industrial Furnaces:						
Value of new orders (electric), $ thousand	650	486	440	650	468	421
Value of new orders (fuel fired), $ thousand	1,275	883	533	1,275	805	454
Electric motors and generators:						
Value of new orders index 1936 = 100	388	304	239	388	293	229
Cast-iron boilers:						
Shipments by weight	27,177	21,942	17,191	—	—	—
Oil burners:						
Number of shipments	93,946	34,972	49,493	—	—	—

[1] The price deflators are those used by the Department of Commerce in estimating constant 1947 dollar G.N.P. See *Survey of Current Business*, November 1953. For machine tools I used their metal-working machinery deflator, with, for 1947 = 100, 1948 = 107·7 and 1949 = 112·8. For the electrical items I used the electrical machinery deflator, 1948 = 103·8 and 1949 = 104·5, and for the other the General Industrial Machinery deflator, 1948 = 109·7 and 1949 = 117·5.

Sources: Statistical Supplement, *Survey of Current Business*, 1953, pp. 164, 166, 167.

year the different types of resources used in different types of fixed investment cannot easily be transferred. As far as demand was concerned there was nothing to offset the fall in purchase of a wide range of types of machinery. (The important exception was automobiles. This is discussed below.) Table VIII shows the

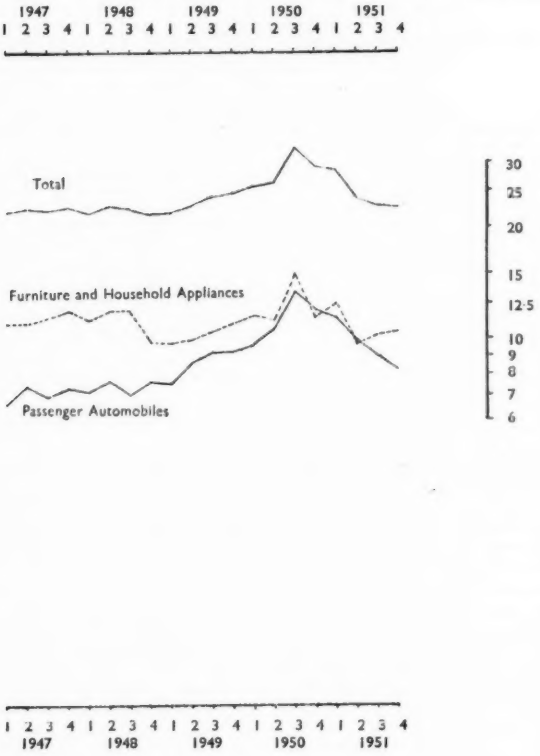
fall in demand during 1948–49 for several important types of producers' durable equipment.

In the six categories included in Table VIII the reduced demand is apparent from the constant 1947 price figures. At current prices, only new orders for machine tools increased in

CHART III

Personal Consumption Expenditures on Durable Goods ($ billion)

Seasonally adjusted at annual rates. Deflated and on ratio scale.



1948, but as the deflating index is a very suitable one in this case, this increase can be disregarded.

From the different varieties of evidence presented, there appears to be no doubt that private fixed investment fell substantially in 1948, and fell even more in 1949.

We now consider the demand for consumers' durable goods. The changes in consumers' expenditures in 1948 and 1949 were different from the changes in producers' expenditures. This fact is illustrated in Table IX.

TABLE IX

Personal Consumption Expenditures (*Constant* 1939 *dollars*)

($ billion)

	Total.	Durables.	Non-durables.	Services.
1946	95·7	10·4	50·2	35·2
1947	98·3	12·3	49·5	36·4
1948	100·3	12·6	49·7	38·0
1949	103·2	12·9	50·7	39·6
1950	108·9	15·5	51·7	41·7
1951	108·5	13·4	52·4	42·6
1952	111·4	12·9	54·5	44·0

Source: Survey of Current Business, February 1954, Table 1, p. 5.

Total consumption—in terms of constant 1939 dollars—of consumers' durables increased in 1948 and again in 1949 by approximately 3% in both years. This growth had fallen from an increase in 1947 over the 1946 figure of approximately 20%. Examination of the deflated quarterly figures [1] (see Chart III) shows the following pattern: consumers' purchases of durables fell slightly in 1948 I from the 1947 IV peak, rose to a new peak in 1948 II, almost stayed at the peak in 1948 III, dropped slightly in 1948 IV and 1949 I, and then commenced a steady rise in 1949 II.

A comparison of the yearly totals of the two most important groups of consumer durables, automobiles and parts and household equipment, shows that expenditures in money terms increased for both groups in 1948, while in deflated values they increased by more than 1% for automobiles and declined by less than 2% for household equipment (see Table X).

The quarterly figures—see Chart III—show that automobile sales increased irregularly over the whole period. Household equipment sales increased during 1947, dropped in 1948 I, reached

[1] Total durable expenditures are deflated by means of the Consumer Price Index. As this is unsatisfactory, alternative figures for the two main groups, automobiles and parts and household goods, are given. The deflators are the Department of Labour Wholesale Prices Indexes of Motor Vehicles and Furniture and other Household Durables. Source of Chart III: Total Durables, as for Gross National Product Components. Automobiles and Household, for 1949–51, 1953 Supplement, *Survey of Current Business*, p. 43; for 1947–48, 1949 Supplement, *Survey of Current Business*, p. 41. (Furniture and household equipment plus other durable goods subtracted from G.N.P. durable goods to obtain automobiles and parts.)

a high " plateau " in the second and third quarters of that year and fell considerably in 1948 IV and 1949 I. They started to increase again in 1949 II, and continued to increase during the remainder of the year. Thus while the rate of increase in automobile sales accelerated during 1949, household equipment sales,

TABLE X

Personal Expenditures on Durable Consumption Goods

($ billion)

	Money value.		Deflated.	
	Automobiles.	Household.	Automobiles.	Household.
1947	6·6	10·8	7·2	11·3
1948	7·5	11·4	7·4	11·2
1949	9·4	10·7	8·7	10·4
1950	12·3	13·0	11·5	12·3

Source: 1953 Supplement, *Survey of Current Business*, p. 43.

which had been at a high and fairly constant rate from 1947 IV to 1948 III, fell for a short period. The rise in the latter part of 1949 did not take sales quite back to their " plateau " level.

Before some conclusions are drawn about the effect of these expenditures, we shall consider the statistics of production. These are shown in Table XI.

TABLE XI

Indexes of Output of Major Consumer Durable Goods

(1947–49 = 100)

(Goods Included Comprise 63% of Consumption Expenditure on Durable Goods for 1947–49 Average Expenditures)

	1947.	1948.	1949.	1950.	% weight.
Total	91	99	110	153	100·00
Passenger automobiles	85	93	122	160	52·25
Household goods	97	106	96	146	47·75
Carpets	92	114	94	111	4·23
Furniture	103	105	92	117	17·64
Major appliances [1]	96	114	90	136	17·08
Radio and television	92	91	118	239	8·80

[1] Including (with % weight in parentheses) refrigerators (6·64), cooking-stoves (4·11), washing machines (3·61), vacuum cleaners (1·26), freezers (1·07).

Source: *Federal Reserve Bulletin*, October 1951, p. 1236.

Total output of consumer durables increased by over 10% in 1949 over 1948. The increase was due to the huge increase in passenger automobiles, while the output of household goods fell.

We have seen that the deflated value of consumer expenditures on automobiles increased by over 17% in 1949—see Table X—and although changes in the volume of retailers' inventories are not available, there appears to be sufficient evidence to conclude that in the passenger automobile trade divergent rates of growth between output and consumption reduced the volume of inventories during 1949. For household goods it seems the divergence between these rates of growth had the same effect—output fell by approximately 9%, while consumption fell by 6%—and in all probability the volume of inventories fell slightly. This evidence is admittedly slight, but it seems safe to infer first, that a planned reduction in automobile inventories did not occur, and secondly, that any reduction in retailers' inventories of household goods was at least partly caused by the rise in consumption which commenced in 1949 I and which continued throughout the year, *i.e.*, this inventory reduction may have been also partly unplanned.

The question, how did demand for durable goods behave, has been answered within the limits of the statistical sources used in this paper. Total purchases of all consumer durables during 1947–48 were on the whole constant, and increased during 1949. The cyclical fall in demand for durables was centred almost exclusively in the fall in private fixed investment, particularly in the manufacturing industries. It is considered unlikely that the switching of resources to public construction or even armaments could have prevented the depressing influences upon inventories and production. We have seen that this fall began early in 1948. It appears reasonable to infer that the small reduction in the volume of durable goods manufacturers' inventories during 1948, and the much larger reduction during 1949, represents a fall in stocks of purchased materials and goods in process—and even in stocks of finished goods for standard lines of machinery and equipment—induced by the falling rates of new orders and sales.

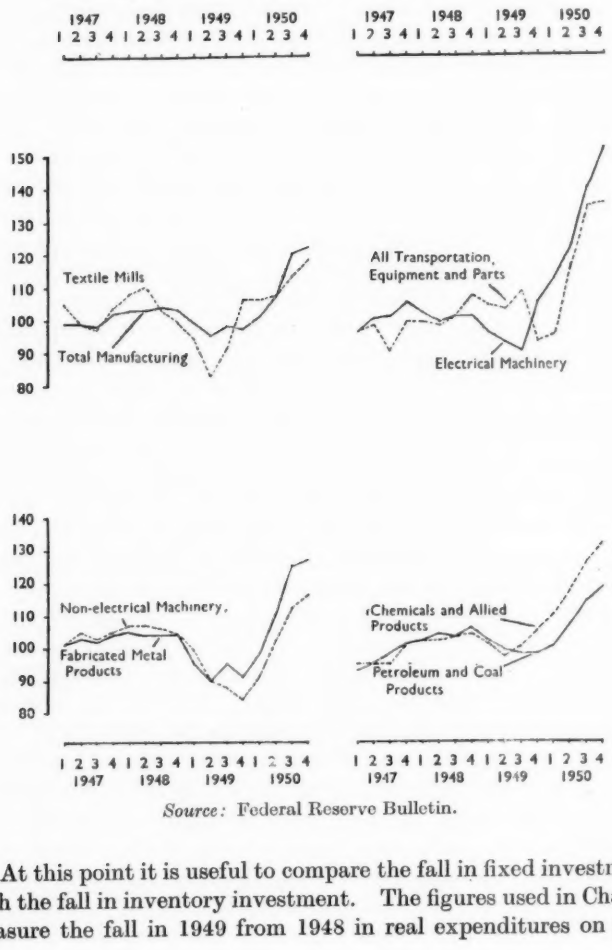
Separate figures for the output of producers' durable goods are not available. However, the Federal Reserve Board's indexes of production support the above conclusions (see Chart IV). Outputs of non-electrical machinery started to fall in 1948 III; of fabricated metal products in 1948 II; of electrical machinery in 1948 I. The index for total manufacturing did not fall until 1948 IV. Also, while total manufacturing started to rise again in 1949 III, the outputs of both electrical and non-electrical machinery did not rise again until 1950 I. It has been desirable in this paper to approach the problems discussed from the point

of view of inventories, because the orthodox view has determined the label "an inventory recession." This approach should not obscure the crucial nature of the fall in demand for and output of fixed investment goods. The reduction in stocks of purchased materials and work in progress was the necessary consequence of the fall in demand.

CHART IV

Selected Indexes of Manufacturing Production

Seasonally adjusted. Quarterly averages. 1947–49 = 100.



Source: Federal Reserve Bulletin.

At this point it is useful to compare the fall in fixed investment with the fall in inventory investment. The figures used in Chart I measure the fall in 1949 from 1948 in real expenditures on pro-

ducers' durable goods alone at approximately $2·3 billion. Tables V and VI show that the fall in the volume of investment in non-durable goods manufacturers' inventories in 1949 from 1948 was approximately $1·4 billion. These figures indicate to some extent the relative impact of the falls in different types of investment upon production. Quantitatively the fall in demand for producers' durables was almost twice as important as the fall in non-durable inventory investment—even assuming that all of the latter fall represents an identical fall in production.

Other Types of Demand

Before this paper is concluded with a more speculative discussion of some wider aspects of the recession, I shall deal briefly with two factors mentioned by Professor Hamberg and Messrs Bratt and Ondrechen. First of all, non-durable goods. As Table VIII shows, personal consumption expenditures on non-durables increased during 1948 by less than ½%. But in 1949 they increased again by 2%. Chart I shows that a marked rise in total personal consumption expenditures began as early as 1948 III and continued during 1949. Now, retailers' non-durable inventories fell in book value in 1949 by $0·326 billion, which was a fall of 3·8% The Consumers' Retail Price Index fell during 1949 by between 1 and 2%, so the inventory fall was not entirely due to marking down. On the other hand, consumption expenditures on non-durables rose in 1949 over 1948 by $1·7 billion. Hence it appears that for non-durable retailers as a whole, part of the inventory reduction may have been caused by an unexpectedly large increase in sales. Retailers' purchases and non-durable manufacturing production had fallen in late 1948—possibly because of the reduced growth in consumption during early 1948 as Professor Hamberg states, and of the break in food prices during 1948 which Messrs Bratt and Ondrechen mention—but these reductions were of short duration, for production was increasing again by the middle of 1949. But the evidence suggests that it did not increase quickly enough, and stocks had to bear part of the increase in demand. This argument has been presented to show that there are grounds for believing that what reduction in retailers' stocks did take place may have been caused by a rise in consumption—hardly an under-consumptionist explanation of the inventory reduction—rather an example of expectations proved incorrect.

Secondly, Messrs Bratt and Ondrechen offered, and Professor

Hamberg accepted, the importance of a fall in exports during 1948. I shall confine myself to the statistics in Table XII.

TABLE XII

Exports of United States Merchandise (Monthly Average)

($ million)

	Quantity Index 1936–38 = 100.	Agricultural products.	Non-agricultural products.
1947	275	330·0	933·4
1948	214	289·4	754·9
1949	219	298·1	696·5

	Automobiles and parts.	Chemicals and products.	Coal and products.	Iron and steel and products.	Machinery.	Petroleum.	Textiles.
1947	91·9	70·8	52·8	68·7	196·1	53·5	118·1
1948	74·9	65·6	41·0	54·1	192·2	54·8	70·3
1949	60·9	64·5	25·7	61·0	201·4	46·8	54·7

Source: 1953 Statistical Supplement, *Survey of Current Business*, pp. 104, 107–108.

It appears that the quantity of exports declined substantially in 1948 and rose slightly in 1949. The major fall was in non-agricultural products. The particular types of products which fell (in value) are interesting: the important ones were textiles, automobiles and parts, coal and iron and steel milled products. The fall in textiles, of about $48 million, helps to explain the rise in inventories shown in Table V, and the fall in production shown in Chart IV. The really interesting figure, though, is that for machinery. Machinery exports represented almost 20% of non-agricultural exports, and their fall was negligible. Machinery prices rose in 1948, but even that does not alter this conclusion. The very product for which demand was falling at home was on the whole still selling well overseas.

In passing, some aspects of the effect of the recession upon American demand for imports may be noted. Reference again to Table I shows that approximately 30% of the book value reduction in non-farm inventories in 1949 is accounted for by a reduction in the stocks of purchased materials held by durable goods manufacturers. Another 20% was due to reductions in similar stocks held by non-durable goods manufacturers. The percentage falls from end 1948 to end 1949 were 18·0 and 9·5%, respectively. From what we now know about the demand for

durable goods, it seems safe to assume that actual purchases of raw materials by manufacturers fell substantially also. Hence it is possible that the main impact on imports—and hence upon the balance of payments of the Sterling Area—came from this quarter. If this is true, then the reduction in the demand for consumers' imports was less important in the international repercussions of the recession than the reduced demand for raw-material imports (and the reduced demand for non-durable raw materials was less important than the reduced demand for durable raw materials, especially metals). Consequently, it may be that the 1948–49 recession offers little aid in predicting the effects of the behaviour of the American economy upon other economies in the future, unless there is a substantial fall in fixed investment in America which can give rise to a large fall in imports of durable-goods raw materials.

Government Expenditures

The most important source of expenditures not yet considered were those of Government. In Chart I total Government purchases—including public new construction already discussed—are seen to have increased by something over 30% during 1947–48. After the second quarter of 1949 they declined and did not increase again until the last quarter of 1950. (As stated above, the deflator used is not entirely satisfactory. However, the turning points stand out clearly.) The two constituent groups are Federal National Security expenditures and other purchases of goods and services.[1] "Other purchases" grew steadily from 1947 IV to the end of 1949, the annual seasonally adjusted rate in current values rising from $17·0 billion to $25·5 billion. National Security expenditures—foreign aid and military—increased from an annual rate in current values of $11·6 billion in 1947 III to $20·5 billion in 1949 II, after which they fell back to $17·0 billion in 1950 I. Total 1949 Government purchases in current values were approximately $7·0 billion greater than 1948. When new construction, wages and salaries and net purchases from abroad are subtracted, the remainder of approximately $1·8 billion is the increase in Government purchases of goods from business.[2] The unknown proportion of this which represents armaments and producers' durable goods cannot have been very large, and it

[1] See *Survey of Current Business*, April 1952, p. 24.

[2] For Government Expenditures in 1948 see 1951 National Income Supplement, *Survey of Current Business*, Table 9, p. 155; in 1949 see *Survey of Current Business*, July 1953, Table 9, p. 15.

appears unlikely that it could substantially offset the reduction in private fixed investment. Also, National Security expenditures, the group including armaments, fell considerably—by more than 15% in current values—in the latter half of 1949, and may have caused further reductions in the rate of production in certain industries.

The conclusions drawn from this brief discussion of Government expenditures are : (i) the yearly rise in new construction and armaments would probably not offset in terms of values the decline in private fixed investment; (ii) it is unlikely National Security spending contributed to the revival of business in late 1949; (iii) the increasing rate of total Government expenditures during 1948 and early 1949 would have given a floor to the decline in production generally. Apart from National Security expenditures in late 1949, Government spending obviously played an important part in the early stages of the recession in private business by keeping certain types of demand at high levels. The anti-cyclical character of Government spending over 1948–49 had a large part in the changing of a slump into a recession.

Conclusions

If the interpretation of the recession outlined above is accepted, then the most interesting feature is the cycle in fixed investment. As this will be the subject of a later study, my remarks will be brief. Reference to Charts I and II shows that the 14% fall in total purchases of producers' durable goods which commenced in 1948 III reached its bottom in the last half of 1949. By the end of the second quarter of 1950 total expenditures had revived so much that they were above the early 1948 level. This large swing occurred within two years. The amplitude of the swing in total private new construction was smaller and the period was shorter. New construction started to rise in 1949 III. As Chart II shows, non-farm capital expenditures started to rise in 1950 I, but did not reach the early 1948 level again until 1951. Manufacturing capital expenditures did not begin to rise until 1950 II.

Aggregate data for calendar years and large sectors of the economy at first sight suggest a connection between falling rates of increase in total manufacturing production or personal consumption expenditures on one hand, and the fall in fixed investment on the other. This connection—the familiar accelerator mechanism—when allowance is made for a degree of flexibility in production periods and decision lags and for the proportion of invest-

ment loosely called replacement investment to which the accelerator mechanism need not necessarily apply, is needed from one theoretical point of view to link the cycle in fixed investment with the cycle in changes in the inventories of non-durable goods manufacturers and farms with a common cause. (Although, as suggested in various sections of this paper, the inventory cycle was most likely the result of several divergent and unconnected influences.) Now, it is difficult to establish the existence of an accelerator mechanism at work during 1947–48, on any detailed analysis. As Chart II shows, total manufacturing production rose in 1947 IV and continued to rise, although at a slower rate, during the first three quarters of 1948. As we have seen, personal consumption as a whole tended to level off in early 1948, and these changes in rates of growth might seem at first sight to support the hypothesis of an accelerator—or rather decelerator—at work.[1] But several objections can be made to this hypothesis.

First, investment in the important group of service industries —commerce, communication and construction—fell substantially also, and had been falling since the beginning of 1947. Secondly, the difference in the rate of manufacturing production and personal consumption is possibly significant: production did not start to fall until 1948 IV, by which time personal consumption was starting to rise again; and while, in early 1948, consumption was roughly constant, production was rising. It would be reasonable to infer, then, that manufacturers did not respond to the levelling off in consumption until late 1948, and it is thus unlikely that this levelling off in consumption in early 1948 directly affected their capital expenditures of mid-1948, which were probably planned in early 1948 or even 1947. This argument is not conclusive, but it shows at least that the effect of falling rates of increase in consumption must be pushed back into 1947 and early 1948 if they are to be relevant, and here the difficulties increase, for consumption had a high rate of growth during 1947. Thirdly, a preliminary examination of the figures for individual manu-

[1] The only published results of the estimation of parameters of a model involving an accelerator relation, using G.N.P. deflated quarterly data from 1947–50, of which I am aware are those of G. H. Fisher, "A Simple Econometric Model for the United States," *Review of Economics and Statistics*, Vol. XXXIV, pp. 46–8.

While these results are very interesting and I would not criticise them from the point of view of the methods of statistical inference, I think it worth while to point out that such results do not establish the existence—or the non-existence-of causal accelerator mechanisms. The criticisms I make concerning lags and the variety of patterns in the disaggregated statistics apply to such econometric results.

facturing industries shows that in many important industries capital expenditures were declining as early as the last half of 1947. Such industries were fabricated metal products; non-electrical machinery; motor vehicles; electrical machinery; stone, clay and glass products; chemicals and allied products; petroleum; and rubber. And in three of these, motor vehicles, petroleum and chemicals, production rose at a roughly constant rate from the end of 1946 until at least the end of 1948. A simple accelerator notion is difficult to maintain.

It can be suggested that there are other explanations of the fall in expenditures on plant and equipment. The most obvious is that post-war replacement had been completed during 1947. Another is that the ratio of prices of plant and equipment to a general price level rose during 1948 and early 1949, and that during 1948 the price of investible funds rose.[1] However, it is doubtful if price and cost considerations were so important, because there was no noticeable fall in undistributed profits until late 1948.

The rise in fixed investment after its fall has some connections with the rise in consumption during 1949 and early 1950. It is doubtful if Government purchases for rearmament or for foreign aid were effective as early as late 1949. Two divergent trends in late 1949 were the fall in undistributed profits and a fall in the price ratio mentioned. These remarks concerning the fixed investment cycle are inconclusive. The existence and importance of the cycle appear to be proved, but a complete explanation is still needed.

Finally, the absence of any noticeable multiplier effect upon consumption needs be mentioned. Consumption rose quite steadily during 1949. The fact that Government purchases of goods and services did not fall to any great extent until the end of

[1] The ratio of an index of the prices of fixed capital to the general wholesale price index suggests that prices of fixed capital are more flexible than the general price level, *i.e.*, they rose farther in 1948 and fell farther in 1949 than did the general price level. This pattern seems to have continued after 1949 also. In some manufacturing industries the change in fixed investment lags three to six months after a change in this ratio, and for private fixed investment in plant and equipment as a whole the lag can be discerned. While the long-term level of investment may be uninfluenced by these changes—in fact, the long-run causal relationship may be the other way round—during short periods, such as are involved in quarterly revisions of investment decisions, the timing of investment already planned may depend considerably upon the relative prices of the fixed assets. If business decisions do consider this factor, then as the prices of plant and machinery appear to be elastic with respect to sales, a cobweb mechanism may play a part in the timing and hence in the short-period rate of fixed investment expenditures.

1949 may have helped. But the slight fall in the cost of living in 1949 may also have been important.

The previous discussion of the recession in the ECONOMIC JOURNAL brought to light several important influences affecting the fall in production in late 1948 and in 1949. The evidence of this paper also points to a wide variety of influences, as opposed to a single dominant cause. The factors most likely to have had an effect in reducing the rate of production were the fall in fixed investment and the cessation of inventory investment by farms and non-durable goods manufacturers and retailers. In late 1948 and early 1949 these depressing influences were modified by the expansive influences of Government expenditure. When the latter expenditures declined in late 1949 their place was taken by an increasing rate of personal consumption expenditures which were associated with, and probably caused, renewed inventory investment and later in early 1950 renewed private fixed investment. I accept the view that a reduced rate of growth in consumption—both domestically and in the export trade, where sales actually fell in many lines—in 1948 caused unplanned inventory accumulation, which induced a fall in production of certain non-durables and consumer durables. On the other hand, I doubt whether the fall in private fixed investment was caused by a similar simple accelerator mechanism, although apart from suggesting that post-war replacement of fixed assets was ending—at different rates and times—I have no simple obvious explanation to offer.

It may be useful if this rather empirical outline of the recession is interpreted within the framework of a more general trade-cycle model. The rates of expenditures of the various sectors of the economy were controlled or caused by two groups of influences: the multiplier–accelerator mechanisms on one hand, and "the others"—autonomous in terms of the model—on the other. The proportions of the expenditures which were influenced by multiplier–accelerator mechanisms during the post-war period were probably very small. In terms of the physical analogy of a dynamical coupled system the couplings were weak. Hence the time series measuring various rates of expenditure might show divergent courses with largely non-coincident fluctuations, differing considerably from the time series produced by a model in which the autonomous expenditures were relatively small. Under these circumstances the beginning, the course and the end of a fall in production would be very largely stochastic occurrences. In other words, a cycle in the rate of production was the result of

several largely fortuitous coincidental movements between expenditures not very strongly linked by multiplier–accelerator mechanisms. Since 1945 both the change in farm and non-durable goods inventories, on one hand, and fixed investment, on the other, show marked cyclical movements, not always coincidental. (The same can be said about most other time series during the period.) A coincidence, fortuitous in terms of the model, was responsible for the signs of depression which appeared in late 1948.

If the model contained other forms of coupling, *i.e.*, if other causal relations were introduced, such as price and interest elasticities, then the fortuitous character of the coincidence could in principle disappear. For example, it could be argued that the disappearance of the inflationary gap during 1948 was largely responsible for the end of upward price movements and the following tendency for prices to fall. This, in turn, could have entailed the cessation of inventory accumulation. As far as the disappearance of the inflationary gap itself is concerned, the most important direct cause may have been the decline in fixed investment. The multiplier effects of this decline would reduce consumption, while this influence would be offset by the autonomous increase in Government expenditures. The net effect upon consumption was not a rise or fall, but a levelling off. The part of the increase in Government expenditures representing public new construction, and also private residential new construction, may not necessarily have been entirely autonomous in terms of the model, but may have been induced by the fall in construction costs in the early part of 1949. It has been suggested that a cobweb mechanism may have underlain the cycle in fixed investment. Consequently, such a model would attach considerable importance to the influence of price changes upon business decisions regarding expenditures on fixed and inventory investment. On this orthodox note I end this sample speculation.

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LINEAR EXPENDITURE SYSTEMS AND DEMAND ANALYSIS: AN APPLICATION TO THE PATTERN OF BRITISH DEMAND [1]

I. Introduction

The object of this paper is fivefold. The first objective is to derive a practical system of demand equations which possess properties usually considered desirable from the standpoint of elementary economic theory. The second is to consider the statistical problems involved in applying the system of equations. The third is to analyse the pattern of demand for consumers' goods in terms of this system on the basis of annual data relating to the United Kingdom over the years 1920–38. The fourth is to compare the results of this system, and systems like it, with the actual state of demand in 1900. Finally, the fifth is to compare the post-war structure of demand with what might be expected from the inter-war relationships under free-market conditions.

The information on which this study is based is derived from the investigation of certain groups of consumers' expenditure, quantities bought and prices paid given in [1] and preliminary estimates for the remaining categories of consumers' goods and services which, in final form, will in due course appear in [2]. The essential feature of this investigation is that it is concerned not simply with the demand for individual commodities or groups of commodities considered in isolation but with the demand for all commodities bought by consumers classified into a number of groups.

It is convenient at this point to indicate the nature of the notation used in the following sections. Greek letters in the lower case denote scalars. Column vectors are denoted by Roman letters in the lower case and unrestricted matrices are denoted by Roman capitals. Diagonal matrices are represented by the symbol for a column vector surmounted by a circumflex accent. Letters (usually Roman) of the lower case with suffixes are used to denote the elements of vectors or matrices.

[1] I should like to acknowledge here the help I have received from a number of friends in the preparation of this paper. In particular my thanks are due to Messrs. S. J. Prais (now at the University of Chicago), J. A. C. Brown and J. Aitchison of the Department of Applied Economics and to Mr. D. A. Rowe who is working with me at the National Institute of Economic and Social Research on the estimates appearing in [1] and [2]. The calculations were undertaken by Miss Potter and Miss Ayling at the National Institute.

II. A System of Demand Relationships

Let p and q denote respectively a price and a quantity vector and let $\mu \equiv p'q$ denote total expenditure. Consider the system of relationships

$$\hat{p}q = \hat{p}\bar{q} + b(\mu - p'\bar{q}) \quad . \quad . \quad . \quad . \quad . \quad (1)$$

In (1), $\bar{q}$ may be identified with a vector of quantities to which consumers are in some sense committed and b denotes a vector of constants which sum to unity. Then, on the hypothesis (1), the expenditure on the ith commodity (or group) is equal to a certain basic consumption, $\bar{q}_i$, valued at current prices plus a certain proportion, b_i, of supernumerary income, measured here by total expenditure, μ, less total committed expenditure, $p'\bar{q}$.

From a common-sense point of view (1) may seem a reasonable first approximation to a law of demand. For, on the assumption that $\mu > p'\bar{q}$, it entails that consumers first use up a certain amount of their income (here total expenditure) in acquiring the consumption vector $\bar{q}$ at current prices, whatever these may be, and then distribute their remaining income over the set of available commodities in certain fixed proportions given by the elements of b.

If $\bar{q}$ is the null vector, then (1) reduces to

$$\hat{p}q = b\mu \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad (2)$$

The vector $\hat{p}q$ has as elements the expenditures on individual commodities or groups. Equation (2) states that each of these expenditures is proportional to μ.

The system (1) underlies the Klein–Rubin constant utility index of the cost of living [3], and its properties have been examined by Samuelson [4]. It may be written in the form

$$q = \hat{p}^{-1}\{b\mu + (bi' - I)\hat{c}p\} \quad . \quad . \quad . \quad . \quad . \quad (3)$$

where i is the unit vector, I is the unit matrix and $c = -\bar{q}$. This expression when premultiplied by $\hat{p}$ reduces to (2) if c is the null vector.

If (3) is premultiplied by $\hat{p}$ it yields a system in which expenditures on individual commodities are expressed as linear functions of total expenditure and prices. Such a system is here termed a linear expenditure system. The system (3) is a restricted form, since in it the coefficients of the price ratios depend only on $2m - 1$ independent parameters instead of the $m^2 - 1$, where m is the number of commodities, which would be involved in the general case. However, it is the most general linear expenditure system which is compatible with three conditions

frequently imposed on demand systems in theoretical work. These conditions may be stated as follows.

(i) *Additivity.* This implies that the sum of the expenditures as given by the system is identically equal to total expenditure, or that

$$p'q \equiv \mu \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad (4)$$

(ii) *Homogeneity.* This implies that for each commodity the sum of the total expenditure (or income) elasticity and all the price elasticities is identically zero, or that

$$\hat{q}^{-1}(a\mu + Ap) \equiv 0 \quad . \quad . \quad . \quad . \quad . \quad . \quad (5)$$

where a is the vector of quantity derivatives with respect to income, A is the matrix of quantity derivatives with respect to price and 0 is the null vector.

(iii) *Symmetry of the substitution matrix.* This is the Slutsky condition, namely that

$$S \equiv S' \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad (6)$$

where

$$S = \hat{q}^{-1}(ai' + A\hat{q}^{-1})\mu \quad . \quad . \quad . \quad . \quad (7)$$

In order to see with what added restrictions (3) may be regarded as the most general system of its kind which satisfies (i), (ii) and (iii), let it be rewritten in the more general form

$$\hat{p}q = b\mu + Bp \quad . \quad . \quad . \quad . \quad . \quad . \quad (8)$$

The additional restrictions needed if (i) is to be satisfied by this system are obtained by premultiplying (8) by i'. This will yield on the left-hand side $p'q$ the sum of the expenditures, and on the right-hand side μ, as required, if and only if

$$i'b = 1 \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad (9)$$

and

$$i'B = 0' \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad (10)$$

In other words the b_i must sum to unity, and the elements in the columns of B must in each case sum to zero.

Condition (ii) also gives no difficulty, since for (8)

$$a = \hat{p}^{-1}b \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad (11)$$

and

$$A = \hat{p}^{-1}[B - \hat{p}^{-1}(\hat{b}\mu + Bp)] \quad . \quad . \quad . \quad . \quad (12)$$

where $\widehat{Bp}$ denotes a diagonal matrix constructed from the vector Bp. If these values are substituted into the left-hand side of (5) there results

$$\hat{q}^{-1}\{\hat{p}^{-1}b\mu + \hat{p}^{-1}[B - \hat{p}^{-1}(\hat{b}\mu + \widehat{Bp})]p\} \equiv 0 \quad . \quad . \quad (13)$$

Thus condition (ii) places no further restrictions on b and B. It will now be shown that condition (iii) restricts the form of B. From (7), (11) and (12) it follows that

$$\begin{aligned} S &= \hat{q}^{-1}\hat{p}^{-1}\{bi' + [B - \hat{p}^{-1}(\hat{b}\mu + \widehat{Bp})]\hat{q}^{-1}\}\mu \\ &= \hat{q}^{-1}\hat{p}^{-1}\{bi' + [B - \hat{q}]\hat{q}^{-1}\}\mu \quad . \quad . \quad . \quad . \quad . \quad (14) \end{aligned}$$

From this expression the nature of the restriction on B if (iii) is to be satisfied can be seen. For in (14) the last term on the right-hand side is the product of diagonal matrices, and so symmetric, whereas the first two terms are not. If these terms are pre- and post-multiplied first by $\hat{q}$ and then by $\hat{p}$ and if the scalar μ is neglected, there results

$$bi'\hat{p}\hat{q} + B\hat{p}$$

which may be written as

$$bq'\hat{p} + B\hat{p}$$

A substitution for q from (8) into this expression yields

$$b(b'\mu + p'B')\hat{p}^{-1}\hat{p} + B\hat{p}$$

which, since the first term is symmetric, can be reduced, for present purposes, to

$$bp'B' + B\hat{p}$$

or

$$bi'\hat{p}B' + B\hat{p}$$

If this expression is to equal its transpose then

$$B\hat{p}(ib' - I) = (bi' - I)\hat{p}B' \quad . \quad . \quad . \quad . \quad (15)$$

whence

$$B = (bi' - I)\hat{c} \quad . \quad . \quad . \quad . \quad . \quad . \quad (16)$$

as in (3), where c is a vector of constants. Equation (16) gives the most general form of B which is independent of p. It would be possible to replace c in (16) by $\hat{p}D$, where D is a symmetric matrix but this would make B depend on p.

It will be seen that (8) with B restricted as in (16) cannot, for practical purposes, describe a system which contains inferior or complementary groups of commodities. For the ijth element of S, s_{ij} say, may from (14) be written

$$\begin{aligned} s_{ij} &= \frac{\mu}{p_i q_i}\left\{b_i + \frac{(b_i - \delta_{ij})c_j}{q_j} - \delta_{ij}\right\} \\ &= \frac{\mu}{p_i q_i}(b_i - \delta_{ij})(1 + c_j/q_j) \\ &= \frac{(b_i - \delta_{ij})b_j\mu}{p_i q_i p\, q_j}(\mu + p'c) \quad . \quad . \quad . \quad . \quad . \quad (17) \end{aligned}$$

where δ_{ij} is Kronecker's delta. For practical purposes it may be assumed that supernumerary income, $(\mu + p'c)$, is positive. If s_{ii} is to be negative, as in theory it must be, then $0 < b_i < 1$. This rules out inferior goods. If such goods are ruled out, then b_ib_j is necessarily positive, whence all off-diagonal elements of S must be positive. This rules out complementary goods.

As already indicated, if c is the null vector, the system reduces to (2). In this case the various elasticities are of a peculiarly simple form. Let a^* and A^* denote respectively the vector of quantity elasticities with respect to total expenditure and the matrix of quantity elasticities with respect to prices. Then if $B = 0$

$$\begin{aligned} a^* &= \hat{q}^{-1}a\mu \\ &= \hat{q}^{-1}\hat{p}^{-1}b\mu \\ &= i \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad (18) \end{aligned}$$

and

$$\begin{aligned} A^* &= \hat{q}^{-1}A\hat{p} \\ &= -\hat{q}^{-1}\hat{p}^{-1}\hat{b}\hat{p}\mu \\ &= -\hat{q}^{-1}\hat{p}^{-2}\hat{b}\mu \\ &= -I \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad (19) \end{aligned}$$

since from (2)

$$\hat{b} = \mu^{-1}\hat{p}\hat{q} \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad (20)$$

Finally, in this case it can also be seen that

$$S = ii' - \hat{b}^{-1} \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad (21)$$

III. The Estimation of the Parameters in (8)

In the applications of the following section attention is concentrated on (8) with B as given in (16). A naïve model, corresponding to (2), is given if c is the null vector and a more sophisticated model, corresponding to (1) is given if c is any other vector of constants. These models are termed simple systems. The naïve and more sophisticated descriptions can be applied to individual commodities, and their combination also yields a system, though not one which satisfies either (i) or (iii), which is here termed a mixed system.

If c is assumed equal to the null vector so that B in (8) is the null matrix, the vector b can readily be estimated by taking the least squares regression of p_iq_i on μ (without correction for means) in each of the m equations. But the estimation of the parameters in (8) if c is not the null vector cannot be performed by taking the equations one at a time since each element of c enters into each

equation. It seems in fact to be most convenient to adopt the following iterative procedure.

A provisional estimate of b, say b^*, may be obtained as above and, with this available, (8) with B as given in (16) may be written for period t ($t = 1, \ldots, n$) in the form

$$y_t = X_t c + u_t \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad (22)$$

where

$$y_t \equiv (\hat{p}_t q_t - b^* \mu_t) \quad . \quad . \quad . \quad . \quad . \quad . \quad (23)$$

$$X_t \equiv (b^* i' - I)\hat{p}_t \quad . \quad . \quad . \quad . \quad . \quad . \quad (24)$$

and u_t denotes a vector of disturbances. Since the elements of y_t are dimensionally similar, being in fact all adjusted expenditures, it does not seem unreasonable to estimate the elements of c by minimising the unweighted sum of squares of the disturbances in all equations over all time periods. Thus let

$$y \equiv \{y_1, \ldots, y_n\} \quad . \quad . \quad . \quad . \quad . \quad . \quad (25)$$

$$X \equiv \{X_1, \ldots, X_n\} \quad . \quad . \quad . \quad . \quad . \quad . \quad (26)$$

and

$$u \equiv \{u_1, \ldots, u_n\} \quad . \quad . \quad . \quad . \quad . \quad . \quad (27)$$

so that the whole set of mn equations for m commodities over n time periods can be written in the form

$$y = Xc + u \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad (28)$$

Then the least squares estimate c^* of c is given by

$$c^* = (X'X)^{-1}X'y \quad . \quad . \quad . \quad . \quad . \quad . \quad (29)$$

With this estimate of c it is now possible to form the equations

$$w_t = Z_t b + v_t \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad (30)$$

where

$$w_t \equiv \hat{p}_t(q_t + c^*) \quad . \quad . \quad . \quad . \quad . \quad . \quad (31)$$

$$Z_t \equiv (\mu_t + c^{*\prime} p_t)I \quad . \quad . \quad . \quad . \quad . \quad . \quad (32)$$

and v_t denotes a vector of disturbances, and then to form new estimates of b, b^{**} say, from the equation

$$w = Zb + v \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad (33)$$

where

$$w \equiv \{w_1, \ldots, w_n\} \quad . \quad . \quad . \quad . \quad . \quad . \quad (34)$$

$$Z \equiv \{Z_1, \ldots, Z_n\} \quad . \quad . \quad . \quad . \quad . \quad . \quad (35)$$

and

$$v \equiv \{v_1, \ldots, v_n\} \quad . \quad . \quad . \quad . \quad . \quad . \quad (36)$$

These new estimates take the form

$$b^{**} = (Z'Z)^{-1}Z'w \quad . \quad . \quad . \quad . \quad . \quad . \quad (37)$$

where

$$Z'Z = \sum_t Z_t^2 \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad (38)$$

Thus in estimating b, as opposed to c, the commodity groups are treated one at a time. Given these new estimates of b, it is now possible to re-estimate c and to continue the process until stable estimates of b and c are eventually reached.

The estimation of the parameters in a mixed system provides no additional difficulty. Provided a criterion can be established for deciding which commodities are to be described by the naïve model and which form a subset with price interactions as in the more sophisticated model, then the procedure is as follows. First, the b_i for those commodities which are to be described by the naïve model are calculated. Second, the actual expenditure on this subset is subtracted from μ to yield say μ^* and (8) with B as given in (16) is fitted to the remaining commodities with μ^* in place of μ and without reference to the prices of the first subset of commodities described by the naïve model.

It can be seen that the above method is not affected if year-to-year changes in the variables are used in place of their levels. It can readily be adapted to the case in which all the variables are divided through by μ. The effect of such transformations of variables is not examined in this paper.

IV. An Application of Linear Expenditure Systems, Simple and Mixed

In this section the results are given of analyses of a system of six commodity groups among which the total of consumers' expenditure per equivalent adult has been divided. The methods used were described in the last section and the data to which they were applied relate to the United Kingdom over the years 1920 to 1938. The groups chosen were as follows :

(1) meat, fish, dairy products and fats;

(2) fruit and vegetables;

(3) drink and tobacco;

(4) household running expenses such as rent, fuel and light, non-durable household goods and domestic service;

(5) durable goods of all kinds such as clothing, household durables and vehicles together with transport and communication services;

(6) all other consumers' goods and services.

The first step was to apply simple systems to these commodity groups with results shown in the following table.

TABLE I

Alternative Simple Systems for Six Commodity Groups

	Naïve model (—).			More sophisticated model [a] (1, 2, 3, 4, 5, 6).		
	b.	*c.*	*r.*	*b.*	*c.*	*r.*
1	0·18	—	0·88	0·12	−14	0·97
2	0·05	—	0·88	0·04	− 3	0·97
3	0·11	—	0·95	0·06	−10	0·57
4	0·19	—	0·23	0·23	−11	0·81
5	0·23	—	0·95	0·30	−12	0·97
6	0·24	—	0·98	0·25	−15	0·97

[a] The vector of mean prices for the period is $p = \{0{\cdot}97, 1{\cdot}04, 1{\cdot}02, 1{\cdot}02, 1{\cdot}05, 1{\cdot}02\}$. Accordingly, the values of committed expenditure, £ per equivalent adult, at mean prices are $-\hat{p}c = \{14, 3, 10, 11, 13, 15\}$. The mean values of total expenditure are $\hat{p}q = \{18, 5, 12, 20, 24, 25\}$.

In this table the figures in the columns headed r are the sample correlations between the actual and the calculated expenditures. It can be seen that on the whole the more sophisticated model which involves twelve parameters provides somewhat higher correlations in almost all cases than the naïve model, which involves only six parameters. For one commodity group in each set, the correlation using one model is markedly superior to that obtained from the other. Thus for group 3, drink and tobacco, the naïve model yields a correlation of 0·95, while the more sophisticated model yields a correlation of only 0·57. There are two main reasons for this effect. In the first place the value of b_3 in the naïve model is much larger than the corresponding value in the more sophisticated model. In the second place, in the latter the value of $-p'c$ is rather large, with the result that supernumerary income, $(\mu + p'c)$, is very different from total expenditure, μ. In fact, supernumerary income moves very like total expenditure at constant prices and not like total expenditure at current prices.

If the two sets of correlations are compared it can be seen that the more sophisticated model provides clearly the better description of actual expenditures for commodity groups 1, 2 and 4 and clearly the worse one for group 3. For groups 5 and 6 the correlations are high on either model and there is not much to choose between them.

It is these facts that suggest the possible advantage of a mixed system employing the naïve model for certain groups and the more

sophisticated model for the remainder. Such a combination of the systems is not compatible with a symmetric substitution matrix, but represents a possible type of behaviour which can readily be expressed in words. Thus suppose groups 3, 5 and 6 are described by means of the naïve model while groups 1, 2 and 4 are described by means of the more sophisticated model. Under this scheme, consumers lay out certain fixed proportions of their total expenditure on groups 3, 5 and 6, while for the remaining groups they purchase a certain fixed quantity at current prices and then spread the balance of their expenditure over these remaining groups in certain fixed proportions.

In the following tables the results obtained from three such mixed systems are given. The first, referred to as (1, 2, 4), involves the description of groups 1, 2 and 4 by the more sophisticated model and 3, 5 and 6 by the naïve model. The second, referred to as (1, 2, 4, 5), involves the description of groups 1, 2, 4 and 5 by the more sophisticated model and 3 and 6 by the naïve model. Finally, (1, 2, 4, 5, 6) has only 3 described by the naïve model.

TABLE II

Alternative Mixed Schemes for Six Commodity Groups

	(1, 2, 4).			(1, 2, 4, 5).			(1, 2, 4, 5, 6).		
	b.	*c.*	*r.*	*b.*	*c.*	*r.*	*b.*	*c.*	*r.*
1	0·14	−14	0·99	0·13	−17	0·98	0·13	−16	0·97
2	0·05	− 3	0·96	0·05	−4	0·95	0·05	− 4	0·94
3	0·11	—	0·95	0·11	—	0·95	0·11	—	0·95
4	0·22	−12	0·94	0·17	−17	0·93	0·19	−15	0·97
5	0·23	—	0·95	0·30	−19	0·99	0·30	−16	0·98
6	0·24	—	0·98	0·24	—	0·98	0·22	−19	0·97

The figures in the b-columns call for some explanation. For purposes of comparison with one another and with the corresponding columns of Table I they have been made to sum to unity. If there were no errors in the cases described by the naïve model this would be quite straightforward, since μ^* would be exactly proportional to μ. The existence of such errors is ignored and the original b_i based on the more sophisticated model, which themselves sum to unity, are multiplied in the above table by unity minus the sum of the b_i based on the naïve model.

In Table II there are no really bad descriptions as judged by the correlations. On the whole the three-set model involving only nine parameters is as good as the other two.

V. A Test of the System: Consumption in 1900

From (3) it follows that if p is held constant and μ is allowed to vary, then

$$q = h + g\mu \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad (39)$$

where

$$h = \hat{p}^{-1}(bi' - I)\hat{c}p \quad . \quad . \quad . \quad . \quad . \quad (40)$$

and

$$g = \hat{p}^{-1}b. \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad (41)$$

This means that the partial relationships between individual quantities and total expenditure are linear. In the naïve model c is the null vector, and so accordingly is h.

In a similar way it can be seen that if μ and all the elements of p except the price of the commodity under consideration are held constant and if this price is allowed to vary, then

$$q_i = \theta_i + \gamma_i/p_i \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad (42)$$

where

$$\theta_i = (b_i - 1)c_i \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad (43)$$

and

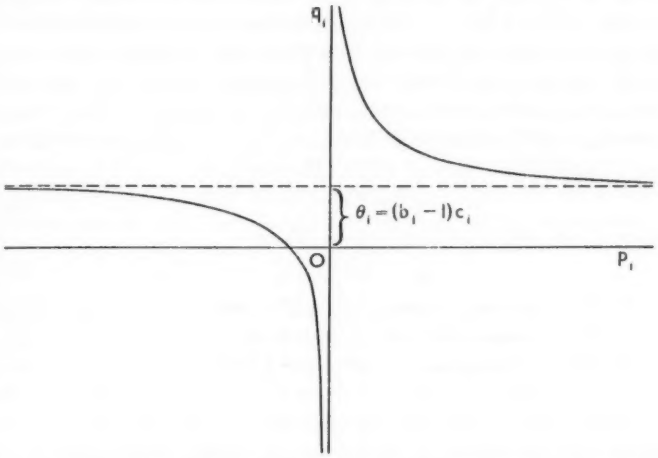
$$\gamma_i = b_i(\mu + \sum_{j \neq i} c_j p_j) \quad . \quad . \quad . \quad . \quad . \quad (44)$$

This means that the ordinary price–quantity demand curves, which show the partial relationships between quantity demanded and the price of the commodity under consideration when total expenditure and the other prices are held constant, have the form of hyperbolæ. In the naïve model c is the null vector so that $\theta_i = 0$, $\gamma_i = b_i\mu$ and the relationships reduce to rectangular hyperbolæ.

The form of the demand curve just described in the ordinary case in which $\theta_i > 0$ and $\gamma_i > 0$ is illustrated in the diagram on p. 521.

Under free-market conditions in which consumers are able to adjust their purchases as they wish subject to the budget constraint, it is to be expected that observed price–quantity points will lie close to the demand curve as shown in the top right-hand portion of the diagram, since the possibility that price or quantity might be negative can be excluded. What is meant by " close " must depend on a consideration of the magnitude of the disturbances in the relationship; it is not to be expected that the particular simple formulations used here, or indeed any other practically attainable formulations will, in all circumstances, exactly reproduce what is observed. Apart from this sort of consideration, however, it can be seen that the system is incapable of representing a situation in which the actual quantity demanded, q_i, is less than θ_i for in such a case the relevant portion of the demand curve is to be found in the bottom left-hand portion of the

diagram in which prices are always, and quantities are sometimes, negative. But θ_i is simply a certain proportion, $(1 - b_i)$, of the fixed quantity, $-c_i$, assumed to be demanded in the system.



A similar difficulty can arise in a different way. It is to be expected that, for the values of μ and p which occur in the period over which b and c are determined, the γ_i will in all cases be found to be positive; indeed, if this is not the case the whole system is hardly capable of an economic interpretation. However, given c, it is always possible that in some other period μ will be so small that the γ_i are negative. This means that the demand curves will lie in the north west and south east quadrants of the diagram. Evidently in such a situation any attempt at projection is likely to give extremely capricious results.

These considerations point to an important limitation of the system, namely that it is not likely to provide a good description of actual behaviour where the elements of q become small compared with the corresponding elements of $-c$. But unless the elements of $-c$ can be interpreted as some sort of Malthusian minima, it is clear that in different circumstances, say when they were collectively poorer, consumers might in fact no longer feel themselves committed to these basic quantities. If in such a case the question is asked " at what price would the average inter-war consumer have been persuaded freely to buy the actual quantity bought," the more sophisticated system may provide the nonsensical answer " at a negative price " for the reasons that have just been given.

The basic trouble in these cases is that c is a fixed vector. While it represents the negative of committed quantities, which may be associated with consumers' notions of their standard of living, it cannot change, and therefore cannot reflect changing notions on this subject. This points the way to a reformulation of the system which would be free from this objection and which would enable perhaps the most important aspect of changes in tastes and habits to be introduced into the system. This alternative consists in making c a function of some appropriate combination of past quantities, q^* say. Thus let

$$c = \hat{f}q^* \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad (45)$$

where f is a vector of constants. Then

$$\hat{p}q = b\mu + (bi' - I)\hat{f}(\hat{q}^*p) \quad . \quad . \quad . \quad (46)$$

In this formulation p is replaced by $\hat{q}^*p$ and b and f are determined in exactly the same way as b and c were determined previously.

Further consideration of this extension, which involves assigning an appropriate measure to q^*, will be deferred to another occasion. The remainder of this section will be devoted to a comparison of the results of the various simple and mixed systems for 1900 with the actual purchases at that date.

Information relating to 1900 is available in [5] and this has been used to construct estimates of p, q and μ for that year. Given the values of μ and p for 1900, the value of $\hat{p}q$ can be worked out on the assumption that consumers' responses in that year were the same as in 1920–38. These calculated values of $\hat{p}q$ can then be compared with the actual values. The following table shows for the various demand systems the percentage excess of calculated expenditure in 1900 over the actual expenditure in that year given the values of μ and p in 1900.

TABLE III

Percentage Excess of Calculated over Actual Expenditures in 1900 Given the Actual Values of μ and p in that Year

	(—).	(1, 2, 4).	(1, 2, 4, 5).	(1, 2, 4, 5, 6).	(1, 2, 3, 4, 5, 6).
1	− 3	− 2	− 2	1	4
2	4	0	0	4	10
3	−15	−15	−15	−15	−35
4	− 7	− 8	− 3	− 2	− 2
5	30	30	25	30	35
6	− 6	− 6	− 6	−13	− 9

These results seem decidedly encouraging, representing as they do a projection over a twenty-year period, in the course of which

a complete upheaval in money values had taken place. The relatively unsatisfactory groups are drink and tobacco (3) and durable goods and transport services (5). In the case of (5) it is obvious that the variety of goods and services available was much larger in the inter-war years than it was in 1900; for example, motor-cars, motor-bus and coach services and many forms of electrical household equipment were virtually non-existent at the beginning of the century. In the case of (3) the major changes in consumption habits over the period is a commonplace of social history. Accordingly, it is not a matter of surprise that the average inter-war consumer, set down in the conditions of 1900, would have wanted to buy less alcohol (partially offset by more tobacco) and more durable goods and transport services than did his counterpart at the time. Thus while the departures of the various models from an accurate description of conditions in 1900 are readily explicable, the fact that they exist suggests the need for some such extension of the theory as was suggested in (46).

VI. Projections for 1952

By using the official estimates contained in [6] and [7] it is possible to make calculations similar to those set out in Table III for 1952. These may be regarded, under conditions of partial rationing and price control, as the quantity adjustments which the average inter-war consumer would have made if, at 1952 values of μ and p, supplies had been infinitely elastic. It is, however, possible to calculate the value of p for 1952 which would be compatible with the purchase of the quantities actually bought in 1952 on the assumption that consumers acted freely in accordance with the inter-war equations and spent, in total, the 1952 amount. For (3) can be rewritten

$$\hat{q}p = b\mu + (bi' - I)\hat{c}p \quad . \quad . \quad . \quad (47)$$

whence

$$p = \{\hat{q} - (bi' - I)\hat{c}\}^{-1}b\mu \quad . \quad . \quad . \quad (48)$$

It must be emphasised that these projections are not likely to constitute good estimates of the actual 1952 values for the simple reason that the free-market conditions on which the estimates of the parameters are based did not exist in that year. The most important areas of control were meat, fats and household coal, which are rationed and controlled in price, and housing, where rent control is still in operation. It is to be expected therefore that in 1952 less will have been spent on these items than the projections in fact show. This means that correspondingly more will have

been spent on other items, since the projections yield a total expenditure equal to the actual expenditure in 1952.

The kind of information which can be sought from the projections is thus quite different from a prediction. Rather they show hypothetical distributions of expenditures and quantities or prices based on pre-war experience and post-war values of either μ and p or μ and q. If any desired quantities within the relevant range could be obtained at 1952 prices then inter-war consumers would alter the 1952 quantities in the ratio of calculated to actual expenditure. If, on the other hand, quantities were fixed at the 1952 levels, then inter-war consumers would have expected to pay prices equal to the projected levels. In practice, supplies are available at something between these extremes, and it is impossible to say what consumption patterns would emerge under free markets without definite assumptions about supply conditions.

In practice, of course, the position is somewhat more complicated. It may be the case that changes in tastes have occurred or that changes in the distribution of income have affected demand in a way which cannot be reflected in the demand systems adopted in this paper. War-time shortages clearly led to an abnormal demand for consumers' durable goods immediately after the war, though it may be doubted if much of this influence persisted to 1952. Allowances for such factors as these, which are not taken into account in the present analyses, would have to be made in a realistic appraisal of possible changes, and could in part, at least, be made on the lines suggested in the preceding section. The analyses given here provide only a framework in which some but not all market influences are taken into account.

The following table shows for the demand systems considered

TABLE IV

Percentage Excess of Projected over Actual Expenditure in 1952 *Given* 1952 *Values of* μ *and* p

	(—).	(1, 2, 4).	(1, 2, 4, 5).	(1, 2, 4, 5, 6).	(1, 2, 3, 4, 5, 6).
1	16	19	16	14	8
2	−15	− 4	− 7	− 8	−17
3	−28	−28	−28	−28	1
4	41	34	15	19	20
5	4	4	17	15	5
6	−13	−13	−13	−11	−16

in the preceding section the percentage excess of projected expenditure in 1952 over the actual expenditure in that year given the values of μ and p in 1952.

If supplies were infinitely elastic at 1952 prices, then all adjustment to free-market conditions would fall on the quantities, and these would move up or down, on the assumptions made, by the percentage shown in the above table.

The figures in the rows of Table IV apart from group (3) are consistent as regards sign, but otherwise show considerable variability. As has been seen in the preceding section, a mixed system appears in the absence of the complications suggested in (46) to be preferable to a simple system in describing the observations.

As was expected, inter-war consumers, faced with elastic supplies under the 1952 income and price situation, would certainly want to purchase more of groups (1) and (4), that is meat and fats and the various goods and services, such as fuel and accommodation, involved in running their homes. In order to do this they would have been prepared to cut down fairly drastically on drink and tobacco (except on the more sophisticated model), and in a more moderate way on the miscellaneous group (6). The adjustments they would have wished to make to their purchases of fruit and vegetables and of durable goods and transportation services appear to be moderate.

This picture represents an extreme in which all adjustments fall on quantities. If, however, supplies were perfectly inelastic at 1952 prices, then the whole of the adjustment would fall on prices. The adjustments which might be expected of the inter-war consumer are shown in the following table based on (48). This can also be presented as a system of expenditure adjustments given 1952 prices and total expenditure, as can be seen by premultiplying both sides of (48) by $\hat{q}$.

TABLE V

Percentage Excess of Projected over Actual Expenditures in 1952 *Given* 1952 *Values of* μ *and* q

	(—).	(1, 2, 4).	(1, 2, 4, 5).	(1, 2, 4, 5, 6).	(1, 2, 3, 4, 5, 6).
1	16	31	52	54	27
2	−15	−31	−46	−33	−38
3	−28	−28	−28	−28	3
4	41	32	5	31	35
5	4	4	9	20	6
6	−13	−13	−13	−39	−31

These figures show, on the various hypotheses, the price changes that would have been required to balance, for the inter-war consumer, 1952 quantities and 1952 total expenditure under free-market conditions. For the naïve model these figures are the

same as the corresponding quantity adjustments in Table IV, but for other models the figures are, in general, different.

These results do not, of course, make it possible to calculate the price and quantity levels which would have been attained if inter-war consumers had been faced with 1952 total expenditures under free-market conditions. To do this it would be necessary to estimate responses on the side of supply, and this is outside the scope of this paper.

VII. Conclusions

A number of conclusions emerge from this paper; some theoretical, others practical, in character.

(1) It is possible, by means of the simple expenditure system, to establish a system of demand relationships which satisfy a number of theoretical conditions. This possibility has been noticed in the literature.

(2) The simple expenditure system may take a special and a general form. The special form, in which the expenditure on any commodity is a fixed proportion of total expenditure, is equivalent to the treatment of households in a closed Leontief model.

(3) The general form, which permits each price to be introduced into each demand equation, may be expected to give better results than the special form. Unlike the latter, however, it cannot describe situations in which the quantities demanded are below certain levels.

(4) This limitation of the general form can in principle be overcome if a theory of the limiting quantities can be developed. A method involving the introduction of irreversibilities which depend on the past history of consumption is suggested but not applied.

(5) In the absence of the complication suggested under (4), it appears that mixed systems in which some commodities are described by the special form and the remainder are described by the general form limited to them yield better descriptions of actual behaviour than either simple system.

(6) A projection for 1900 yields encouraging results. In the two cases where the discrepancy between actual and calculated consumption is at all large there are good reasons for supposing that changes in tastes and habits were important. This points to the significance of the considerations advanced under (4).

(7) In these systems the ratio of parameters to be determined to the number of observations available is independent of the number of commodity groups among which total expenditure is

divided. The method of estimation proposed here is an iterative procedure, and more work is in hand on the convergence properties of the method and on the statistical characteristics of the estimates. It is, however, unaffected by certain obvious transformations of the variables.

(8) The commodity groups chosen in the example given are very broad and far from satisfactory. Further analyses will be undertaken with smaller groups, and in this the possibilities of analysing the sub-groups of main groups will be exploited.

(9) The procedure illustrated here provides a basis and framework which is useful in thinking about possible adjustments to freer market conditions. More cannot be claimed, since use is made of the concept of the inter-war consumer, and no examination is made of the prevailing conditions of supply.

VII. A List of Works Cited

[1] *The Measurement of Consumers' Expenditure and Behaviour in the United Kingdom, 1920–1938.* Vol. I by Richard Stone assisted by D. A. Rowe and by W. J. Corlett, Renee Hurstfield and Muriel Potter (Cambridge, at the University Press, 1954).

[2] *The Measurement of Consumers' Expenditure and Behaviour in the United Kingdom, 1920–1938.* Vol. II by Richard Stone and D. A. Rowe. (In preparation.)

[3] "A Constant-Utility Index of the Cost of Living," by L. R. Klein and H. Rubin in *The Review of Economic Studies*, Vol. XV, (2), no. 38, 1947–48, pp. 84–7.

[4] "Some Implications of 'Linearity,'" by P. A. Samuelson in *The Review of Economic Studies*, Vol. XV, (2), no. 38, 1947–48, pp. 88–90.

[5] *Consumers' Expenditure in the United Kingdom, 1900–1919*, by A. R. Prest assisted by A. A. Adams (Cambridge, at the University Press, 1954).

[6] *National Income and Expenditure 1946–1952* (London, H.M.S.O., August 1953).

[7] *National Income and Expenditure of the United Kingdom 1946–1950* (London, H.M.S.O., April 1951).

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CLASSIC AND CURRENT NOTIONS OF "MEASURABLE UTILITY"

I

IT is ten years since von Neumann and Morgenstern, in their famous aside to the economic profession, announced they had succeeded in synthesising "measurable utility." That feat split their audience along old party lines. It appeared that a mathematician had performed some elegant sleight-of-hand and produced, instead of a rabbit, a dead horse.

The most common reaction was dismay. To "literary" economists who had freshly amputated their intuitive feelings of cardinal utility at the bidding of some *other* mathematicians, it seemed wanton of von Neumann and Morgenstern so soon to sprinkle salt in their wounds with the statement: [1] "It can be shown that under the conditions on which the indifference curve analysis is based very little extra effort is needed to reach a numerical utility." To others, who had said all along that surgery was unnecessary, the verdict was no surprise but still welcome, coming as it did from an unexpected (non-Cambridge) source. But before long both these groups had joined in expressing doubts that von Neumann and Morgenstern had succeeded in doing what (these readers believed) they had set out to do. The spokesman for the "cardinalists," interpreting their cause as his own, was forced to conclude that they "seem to me to have done as much harm as good to the cause to which they have lent their distinguished aid." [2]

However, it is now clear that the impression that von Neumann and Morgenstern were leading a reactionary movement was erroneous. Their cause, if it can be so dignified, is a new one, not that to which Professor Robertson alluded. The operations that define their concepts are essentially new, and their results are neither intended nor suited to fill the main functions of the older, more familiar brands of "cardinal utility." It is unfortunate that old terms have been retained, for their associations arouse both hopes and antagonisms that have no real roots in the new context.

In the latest writings the theory has been formulated un-

[1] Von Neumann and Morgenstern, *The Theory of Games* (Princeton, 1944), p. 17.
[2] Professor D. H. Robertson, *Utility and all That* (London, 1952), p. 28.

ambiguously, so that the subject presents little difficulty to one approaching it now for the first time. This article is directed, instead, at readers who came early to the controversy, and who followed the theory in its various stages closely enough to become thoroughly confused.

By concentrating their discussion on the general concept of "measurability," von Neumann and Morgenstern unfortunately obscured the unique features of their particular construction. Later expositions have tended to follow them in this,[1] or to stress the empirical content of the von Neumann–Morgenstern results.[2] Very little attention has been given to the major source of misunderstandings: ambiguity concerning the differences in derivation and application between the new notion of "measurable utility" and the concept of the same name implied in the writings, say, of Marshall and Jevons. This article will attempt to distinguish clearly between the two concepts, chiefly by examining the different operations by which they are defined and tested.[3]

This procedure may provide some valuable exercise in the use of the operational approach, which in economic literature has been honored chiefly in footnotes. This approach regards the basic definition of a technical concept in scientific usage as: "What is measured by" a particular set of operations. Two different sets of operations are presumed to measure two different "things," although under certain conditions (discussed later) it is justifiable to treat the two concepts as identical. A scientific proposition is operationally meaningful if definite conceivable results of given operations are defined which would *refute* the statement; if it does not *restrict* the class of results which are to be expected, it cannot be useful for scientific purposes. The meaningfulness of concepts and propositions is a necessary,

[1] This is the only shortcoming of the otherwise excellent article by Alchian, "The Meaning of Utility Measurement," *American Economic Review*, March 1953, p. 26. The present paper may serve as a complement to Alchian's.

[2] Friedman and Savage, "The Utility Analysis of Choices Involving Risk," *Journal of Political Economy*, August 1948, p. 279. Mosteller and Nogee, "An Experimental Measurement of Utility," *Journal of Political Economy*, October 1951, p. 371. I have also benefited from reading as yet unpublished papers by Professors Bishop, Marschak and Allais.

[3] This paper was originally written as the first chapter in a thesis, entitled "Theories of Rational Choice Under Uncertainty: The Contributions of von Neumann and Morgenstern," submitted for undergraduate honors at Harvard University, April 1952. The thesis was written under the valuable guidance of Professor John Chipman. I am also greatly indebted to Professors Paul Samuelson, Robert Bishop, Oskar Morgenstern and Frederick Mosteller for the opportunity to discuss problems and to read unpublished writings on the subject, and to Mr. Nicholas Kaldor for his comments.

though not a sufficient, condition for their scientific usefulness.[1] This point of view will prove useful in the concluding section in clarifying the *difference* in meaning of two concepts bearing the same name.

The next section will describe the similarities between the old and new approaches to a " cardinal utility " and will present, in advance, some of the conclusions to be drawn as to their points of contrast. The next two parts examine the operational bases of the two theories, and the final section will analyse in detail the peculiarities of the von Neumann–Morgenstern construction.

II

Suppose that a man who prefers A to B, B to C and A to C must choose between having B for certain or having a " lottery ticket " offering A with probability p or C with probability $1 - p$.[2] Without asking him outright, is it possible to predict his choice? If so, what sort of data are necessary?

Economists of the school of Jevons, Menger, Walras and Marshall, on the one hand, and on the other those following von Neumann and Morgenstern would answer " Yes " to the first question. But their predictions would be based on quite different types of data.

For von Neumann and Morgenstern, it would be necessary to observe the man's behavior in other risk-situations, involving different outcomes or the same outcomes with different probabilities. The older economists, of whom we will take Marshall as typical, would ask no knowledge of his other risk-behavior. They assumed it possible, by observation or interrogation, to discover a man's intensities of liking for sure outcomes; on the basis of this knowledge alone, they were ready either to predict or to prescribe his choice between prospects.

This divergence is concealed by the fact that both schools would summarise the results of their investigations in the same symbolic shorthand, arriving at expressions that are formally

[1] These concepts and the general point of view were first formulated explicitly by Percy W. Bridgman, in *The Logic of Modern Physics* (New York, 1927), who declared them to be implicit in the thinking of modern physicists. The terms, and the emphasis on restrictiveness and refutability of propositions, have become familiar to economists largely through Samuelson's *Foundations of Economic Analysis* (Cambridge, 1948), but the other main propositions are less well known.

[2] A " lottery ticket " of this sort, offering a set of alternative outcomes with stated probabilities summing to unity, will hereafter be known as a *prospect*. If one outcome is offered with unit probability, *i.e.*, with no uncertainty, it will be known as a *sure outcome*.

identical. Under both procedures the results of experiment would be expressed by assigning a triplet of numbers, U_a, U_b and U_c, to the three outcomes, with the property: $U_a > U_b > U_c$. This triplet is a utility index for the three outcomes, since their order of magnitude reflects the order of preference. Next, both Marshall and von Neumann–Morgenstern would form the expression:

$$1 \,.\, U_b \gtreqless p \,.\, U_a + (1 - p)U_c \tag{1}$$

where p and $1 - p$ are the respective probabilities of A and C. Each side of this relationship is a sum of the utility numbers corresponding to the outcomes of a given prospect multiplied by their respective probability numbers. Since the probabilities sum to unity, the result is a weighted arithmetic mean of the utilities, variously known as the mathematical expectation of utility, the expected utility, the moral expectation, moral expectancy, actuarial value of utility and the first moment of the utility–probability distribution.[1]

In each case the prediction (or advice) would have the man choose the prospect with the highest mathematical expectation of utility. Or, if the two sides of the relationship (1) were equal, he should be indifferent between the two prospects. A man whose behavior conformed to this rule could be said to be "maximising the mathematical expectation of utility."

With this much similarity between the two approaches, it is natural that they should commonly be confused. Yet the most misleading point of similarity remains: the fact that in both cases "utility" is said to be "measurable." The necessity of this assumption is seen more clearly if the left-hand side of expression (1) is rewritten $p \,.\, U_b + (1 - p)U_b$ and terms collected to form the relationship:

$$p(U_a - U_b) - (1 - p)\,(U_b - U_c) \gtreqless 0 \tag{2}$$

This is merely relationship (1) in a different form. The rule would now have the man accept the prospective offering A or C if the left-hand side of (2) were positive, reject it if the left-hand side were negative, or be indifferent between it and the sure outcome B if the left-hand side were equal to zero. The important point here is that relationship (2) shows clearly that the rules rely on comparing *differences* in utility.

[1] Of these, "mathematical expectation of utility" and its shorter form, "moral expectation," will be used below. Both must be carefully distinguished from the "mathematical expectation of *money*," which is a weighted sum of the money outcomes, rather than of their utility numbers.

If only preferences were known, the triplet of utility numbers could be replaced by another with the same ordinal relationships. In general, such a monotonic transformation would not preserve equality, or given inequalities, among differences between utility numbers. The rule of maximising expected utility would lead to prediction or advice which would depend on the particular index used, and if preferences were the only guide, the choice of index would be arbitrary. The rule would be meaningless, therefore useless.

In order for the rule to give definite results, it would be necessary to find some " natural " [1] operation that would give meaning to differences in utility numbers, hence to the numerical operations implied by the rule. The new index, summarising the results of the additional operation as well as preferences, would belong to a more restricted set of indices than the set of all ordinal utility indices. Any two indices in which corresponding differences as well as absolute utilities satisfied the same inequalities would be related by a linear, and not merely any monotonic, transformation.[2] It is, then, necessary to find some aspect of behavior that can be described only by a set of numbers determined up to a linear transformation : a set, moreover, which is one of those expressing preferences. So much is necessary in order for the rule of maximising expected utility to be meaningful. Its usefulness, if any, must depend on the particular aspect of behavior which serves this purpose, if one can be found.

To say that both the Marshallian and the von Neumann–Morgenstern theories require a " measurable utility " is precisely to say that they require a utility index determined up to a linear transformation. At this point the similarity ends. In general, the order of magnitude of the differences between corresponding numbers would be different for the two indices; therefore, predictions based on the rule of maximising moral expectation

[1] Von Neumann and Morgenstern use this term to signify an operation other than numerical or logical manipulation of a mathematical model. A mathematical model is useful if the results of a " natural " operation can be correlated with numbers in such a way that numerical operations can symbolise and substitute for the " natural " operation.

[2] For an excellent exposition of the concepts of linear and monotonic transformations, the reader is referred to the article by Alchian, *op. cit.* Briefly, two indices are related by a linear transformation if for every point x on one index, the corresponding point y on the other index satisfies a relationship of the form : $y = ax + b$, where a and b are constants. The two indices differ only with respect to scale and origin.

If the difference between two numbers in one index is greater than, less than or equal to the difference between two other numbers, the corresponding differences in the other index will have the same ordinal relationship.

would differ for the two approaches. Moreover, it might be possible to find a measurable index by one method and not the other. Even if both should " exist," they would be in general monotonic, and not linear, transformations of each other.

III

Such theorists as Jevons, Menger, Walras and Marshall conceived of the crucial natural operation in the measurement of utility as taking place within the mind of a subject; it was a process of weighing introspectively the amounts of " satisfaction " associated with different outcomes.

Such an operation appeared more of an objective basis for theory to them than it would to modern economists. In their view, in the realm of reasonable men one man's introspection was as good as another's, and the theorist's own internal calculations were likely to correspond roughly to those of his subject; to this extent the results of the subject's operation were " observable." However, if challenged to produce less-subjective evidence, it would undoubtedly have occurred to Jevons that the most natural way to obtain the results of the man's introspective measurements would be to ask for them.

The first rough outline of the subject's pattern of " satisfaction " would emerge from an " indifference-map " experiment, in which he is asked to rank the events, A, B and C in order of preference. If he can compare the events and if his preferences are transitive (" consistent "), *e.g.*, if he prefers A to B, B to C and A to C, the results of this experiment are summarised by any triplet of numbers satisfying: $U_a > U_b > U_c$. This triplet is a " non-measurable " utility index, determined up to a monotonic transformation.

In what we will call a " Jevonsian " [1] experiment the man would next be asked to rank his preferences of A to B and his preference of B to C. If he finds that he can state, for example, that his preference of A to B exceeds his preference of B to C, we could summarise this information by any triplet of numbers satisfying the two inequalities: (*a*) $U_a > U_b > U_c$, and (*b*) $U_a - U_b > U_b - U_c$.

Finally, if A and B were sums of money, we could ask the man to vary the sum of money represented by B until he could tell us

[1] This name is suggested by J. C. Weldon, who points out that it implies no more than that Jevons assumed that preferences could be directly compared. " A Note on Measures of Utility," *Canadian Journal of Economics and Political Science*, May 1950, p. 230.

that he found his preference of A to B' equal to his preference of B' to C. If he finds such a B', then the results of this last operation would be expressed by any triplet of numbers satisfying the relationships : (*a*) $U_a > U_b > U_c$, and (*b*) $U_a - U_b = U_b - U_c$. Any two triplets obeying these relationships must be related by a linear transformation; they represent utility indices differing only by scale and origin.

The Jevonsian index for the individual, if one can be found, is thus " measurable "; which in this case means nothing more or less than that the subject was able to give consistent answers to these particular questions. It might be objected that in fact subjects will be unable to answer the questions, or will answer them inconsistently. This is an empirical matter. If the events were the possession of (*a*) one million dollars, (*b*) two dollars, and (*c*) one dollar, it seems likely that most people would answer the question (and, moreover, would state specifically that their preference of A to B exceeded their preference of B to C).[1] For such people, the notion of a cardinal utility index would not be " meaningless "; if it had no other meaning, it might at least imply that their answers to this sort of question could be predicted. Inconsistency is to be expected, particularly with respect to utility differences that are almost equal. But inconsistency also appears (in lesser degree) in the " indifference-map " experiment; in each case the most important information gained concerns choices which the subject finds easy to make.[2]

The more damaging attack has been on the usefulness of the method, though here again the case is not conclusive. If the only " consistency " discovered were consistency of answers with other answers, the results would be trivial. But Marshall and his predecessors regarded such answers as revealing the subject's internal measurements of satisfaction.[3] Since they believed the man based his decisions to act on the results of this introspective operation, they hoped to use the results of a Jevonsian experiment to predict his decisions.

As the ordinalists have demonstrated, decisions in the market-place under conditions of certainty can be predicted on the basis

[1] At least, they would probably do so if asked point-blank and not given time for doubts as to whether the question " meant " anything (induced, perhaps, by the writings of Samuelson). This could be made part of the conditions of the experiment.

[2] The above discussion follows Weldon, *op. cit.*

[3] Such information might by itself be of interest in welfare economics; it might, though it need not, influence the evaluations on which a social-welfare function must be based.

of the " indifference-map " experiment alone. But this is not true of behavior under uncertainty or risk. With a Jevonsian utility index, on the other hand, it *is* possible to frame meaningful hypotheses placing definite restrictions on observable behavior in risk-situations.

The particular rule which Marshall and Jevons proposed (rather more for normative purposes than descriptive) was that the " rational " man would maximise the mathematical expectation of utility. In terms of the expression (1) cited earlier :

$$U_b \gtreqless p \,.\, U_a + (1 - p)U_c \tag{1}$$

the rational man should (would) choose the prospect if the right-hand side were greater, the sure outcome B if the left-hand side were greater. If U_b, the utility that can be had for certain if the prospect is rejected, is regarded as the opportunity cost of the prospect, then the expression (2) :

$$p(U_a - U_b) - (1 - p)\,(U_b - U_c) \gtreqless 0 \tag{2}$$

represents the mathematical expectation of *gain* (measured in utility) associated with the prospect. The first term is the amount of utility that the man stands to win by accepting the gamble (in excess of the utility cost of the gamble) multiplied by the probability of winning, and the second term is the amount of utility he stands to lose multiplied by the probability of losing. The man should take any gambles whose expectation of gain is positive, reject all whose expectation of gain is negative, be indifferent to those whose expectation of gain is zero.

One point about this procedure must be emphasised, for it is in sharp contrast to that of von Neumann and Morgenstern. The utility index, and its measurability, on which the Marshallian predictions were based was not derived from any risk-behavior, and did not depend on any sort of consistency in that behavior. The rule of maximising expected utility on the basis of a Jevonsian index led to prediction, or prescription, of a man's choices among prospects without any previous observation of his behavior in the face of risk.

Actually, in the main field of consumer behavior characterised by risk—gambling—Marshall was not sanguine about the usefulness of the rule as a descriptive hypothesis. He took it as a universal empirical law that answers in the Jevonsian experiment would reveal diminishing marginal utility. In other words, if A, B and C are three sums of money such that $A > B > C$, and if $A - B = B - C$, then he assumed that corresponding utility

numbers would satisfy the inequality: $U_a - U_b < U_b - U_c$. A " fair " gamble is defined as one in which the mathematical expectation of *money* gain is zero, expressed by:

$$(3) \qquad p(A - B) - (1 - p)(B - C) = 0$$

where p is the probability of winning A, $1 - p$ the probability of winning C and B is the cost of the gamble (in the above case, p must equal $\frac{1}{2}$). But, granted decreasing marginal utility, the corresponding expectation of *utility* gain is negative, so the rational man would never accept a fair gamble, or, *a fortiori*, an unfair gamble.

As Marshall was well aware, people did accept fair and even unfair gambles; but this behavior disputed their rationality, not (the curvature of) their utility index. The latter was established once and for all by tests that did not involve risk. Because of the existence of " pleasures of gambling " [1] (which Marshall measured by the acceptance of unfair bets), Marshall would have rejected the observation of risk-behavior as an alternative operation for measuring people's intensities of liking for outcomes.

The particular Marshallian rule governing risk-behavior is not implied by his concept of utility or by the methods of measuring it. An early form of the rule is stated by Jevons: [2]

> " If the probability is only one in ten that I shall have a certain day of pleasure, I ought to anticipate the pleasure with one-tenth of the force which would belong to it if certain. In selecting a course of action which depends on uncertain events, as, in fact, does everything in life, I should multiply the quantity of feeling attaching to every future event by the fraction denoting its probability."

The reliance of this approach on measurability (of " quantity of feeling ") is obvious; but it is equally obvious that the measurability of " pleasure," and even the general principle that likings for prospects should be based on likings for outcomes and their probabilities, does not imply this particular rule of decision-making. On the basis of a given Jevonsian index, Marshall or Jevons could just have easily proposed that the rational man base

[1] Unfair gambling could be " rationalised " if introspective tests revealed that the happiness derived from gambling outweighed the " expected loss of satisfaction " implied by the odds. However, Marshall wished to retain the normative connotation of " rationality " at the expense of predictive value. In his view, the pleasures of gambling " are likely to engender a restless, feverish character, unsuited for steady work. . . . " (*Principles of Economics* (London, 1925), Mathematical Appendix, Note IX, p. 843.) Granted that marginal utility was decreasing, and that pleasures of gambling could be ignored because " impure," then unfair gambling was unequivocally irrational, an " economic blunder."

[2] W. Stanley Jevons, *The Theory of Political Economy* (London, 1911), p. 36.

his preference on the mode, the median, the range, variance or other properties of the distribution of utilities. These rules would have been just as meaningful, and possibly more useful (especially if they took into account measures of " risk " as well as " central tendency "). In fact, it was the feeling that the emphasis on mathematical expectation was arbitrary and unrealistic which led to the decline of the concept even before doubts arose that a measurable utility could be discovered to make it meaningful.

IV

What von Neumann and Morgenstern asserted, in their famous digression,[1] was the possibility that the notion of maximising the mathematical expectation of utility might (*a*) be made meaningful, and (*b*) describe a wider range of risk-behavior than in its old usage, *if " utility " were measured (defined) in a special way.* Since they were concerned only with risk-behavior, the operation they proposed was the observation of choices in risk-situations. If a person's preferences among *prospects*—described merely in ordinal terms—should satisfy certain, apparently weak, axiomatic restrictions, then von Neumann has proved that it would be possible to find a set of numbers which could express these preferences in a particularly convenient way.

This set of numbers would be *a* utility index, because it would be one among all the sets of numbers (related by monotonic transformations) expressing the person's preferences (*not* " intensities of preference " or " quantities of feeling ") among sure outcomes. The novelty would be that this same set of numbers, applying explicitly only to sure outcomes, could also summarise the person's preferences among prospects. In a complete description of the individual's entire preference-structure, it would be unnecessary to list prospects separately or to record explicitly his preferences among prospects; these preferences would be known, through observation, but they could be expressed implicitly by the numbers attached to sure outcomes.

Clearly, the class of indices which could express with such economy preferences both among sure outcomes and among prospects must be smaller than the class of all ordinal utility indices (in most of which it would be necessary to list prospects individually). In fact, it turns out that all indices with this property,

[1] The theory which follows occupies only a few pages in the introduction to their book, and plays no role in the theory of games. The latter theory requires a commodity which is not only measurable but intercomparable and freely transferable, so pay-offs are expressed in money, not in von Neumann–Morgenstern " utility."

if any exist, will be related by linear transformations. Yet the index is not " measurable " in the sense that it is correlated with any significant economic quantity such as quantity of feeling or satisfaction, or intensity, such as intensity of liking or preference. It is derived from *choices*, and describes only *preferences*. It would be " cardinal " (" measurable ") only to the extent that the numerical operation of forming mathematical expectations on the basis of these numbers would be related to observable behavior, so as to be empirically meaningful.

Von Neumann and Morgenstern might simply have proposed the empirical hypothesis that an index of the desired sort could be found for certain individuals. However, this proposition, which we will call the Hypothesis on Moral Expectations, has little inherent plausibility. The major feat of von Neumann and Morgenstern is to show that the Hypothesis on Moral Expectations is *logically equivalent* to the hypothesis that the behavior of given individuals satisfies certain axiomatic restrictions. Since these axioms appear, at first glance, highly " reasonable," the second hypothesis seems far more intuitively appealing than the equivalent Hypothesis on Moral Expectations. It is thus more likely to be accepted on the basis of casual observation and introspection, although the two hypotheses would both be contradicted by exactly the same observations.

Most expositions follow von Neumann and Morgenstern in focusing all attention on the second hypothesis, *i.e.*, on the empirical relevance of the axioms. Once this is accepted, the Hypothesis on Moral Expectations " goes along free " in the form of the Theorem on Moral Expectations, which states conditionally that *if* an individual's behavior conforms to the axioms, a von Neumann–Morgenstern index can be computed for him (this proposition rests on logic rather than observation, and it has been established by several different proofs). Empirical test of the proposition is thus displaced to the axioms which imply it. The logical relationship of the axioms to the Hypothesis is usually left obscure, for the demonstration is too difficult for most readers.[1]

[1] Von Neumann and Morgenstern did not present a proof deriving the Theorem from the axioms until the second edition of *The Theory of Games* (1947); they describe it, with terrific understatement, as " rather lengthy and may be somewhat tiring for the mathematically untrained reader " (p. 617). A different, slightly easier proof, is given by Marschak in " Rational Behaviour, Uncertain Prospects, and Measurable Utility," *Econometrica*, April 1950. A genuinely simple proof has finally been presented by Samuelson, in " Utility, Preference, and Probability," abstract of paper given before the conference on *Les Fondements et Applications de la Theorie du Risque en Econometrie*, 1952.

Therefore the reader must generally take it on faith that behavior violating a particular axiom conflicts with the possibility of finding a von Neumann–Morgenstern index. Instead, we will follow the straighter, though less persuasive, route of describing how the Hypothesis on Moral Expectations would be tested directly.

We can state the Hypothesis in the following form. For a given individual (it is asserted that) a set of numbers *exists* (*i.e.*, can be found) with the two properties: (1) it is one of the sets expressing the individual's actual preferences among sure outcomes (*i.e.*, it is one of his ordinal utility indices); (2) numbers are assigned to sure outcomes in such a way that, if " moral expectations " of *prospects* were computed on the basis of these numbers, one prospect would have a higher moral expectation than another if, and only if, the person actually preferred the former to the latter, and two prospects would have the same moral expectation if and only if the person were indifferent between them.

If, from the set of all utility indices (related by monotonic transformations) one index can be found such that " moral expectations " computed on the basis of this particular set of " utilities " arrange prospects according to an individual's actual preferences among them, then any other index related to the first by a linear (not merely by any monotonic) transformation will also have this property. Thus, if one such index exists, an infinite set will exist: though still a tiny subset of all indices expressing ordinal preferences among outcomes. The Theorem on Moral Expectations states that such a set does exist, if and when the axioms apply. The Hypothesis states that the index actually does exist for given persons.

Having found such an index, we could submit it to a monotonic increasing transformation—*e.g.*, we could take the square or the log of each number—and the resulting set of numbers would be a perfectly valid utility index of outcomes. But it would not serve any more as a utility index of prospects as well; it would no longer be true that moral expectancies would correspond to the individual's actual preferences among prospects.

Our approach will consist of trying to find an index (hypothetically) with the two properties specified, noting in the process the type of behavior which would make this impossible. The " operational content " of the theory should be most obvious from this point of view, since it is intimately related to the body of behavior " ruled out " by the Hypothesis. The greater the amount and

importance of this behavior, the more powerful does the Hypothesis appear, though the less immediately plausible.

The basic operation in deriving a von Neumann–Morgenstern utility index is the observation of an individual's behavior in the very simplest situation involving risk: a choice between a sure outcome and a prospect involving two possible outcomes with given probabilities. The essential restriction the Hypothesis puts on behavior is that, by observing a person's choices in situations of this simple type, it must be possible to predict his choices among sets of prospects each offering a multitude of prizes with complex odds (some of the prizes possibly being other prospects). In the discussion below, the notation $(A, p; B)$ signifies a prospect offering outcome A with probability p or B with probability $1 - p$.

To fix the origin and unit of the utility index we seek, we assign arbitrary numbers to two outcomes (order of magnitude in order of preference); this guarantees that the index, if we can find one, will be unique. For example, let us assign to the money-sums \$1,000 and \$0 the utility numbers 10 and 0: *i.e.*, $U_{1000} = 10$, $U_0 = 0$. Now we consider a third sum, say, \$500, which the individual ranks between the first two; the problem is to find a utility number U_{500} that satisfies the Hypothesis on Moral Expectations, consistent with his preferences and with the two numbers already assigned arbitrarily. The crucial datum in the procedure is the probability $\dot{p}$ at which the person is indifferent between having \$500 with certainty or a prospect (\$1,000, $\dot{p}$; \$0).[1] Suppose that this $\dot{p}$ is $\frac{8}{10}$; *i.e.*, he tells us, or we observe, that he is indifferent between \$500 and (\$1,000, $\frac{8}{10}$; \$0). The Hypothesis on Moral Expectations then implies that it is possible to find a number U_{500} with the two properties:

$$0 < U_{500} < 10 \quad \text{(since he prefers \$1,000 to \$500 and \$500 to \$0)} \tag{4.1}$$

$$1 \,.\, U_{500} = \tfrac{8}{10} \,.\, 10 + \tfrac{2}{10} \,.\, 0 \tag{4.2}$$

Obviously, such a number *can* be found: $U_{500} = 8$. So the Hypothesis has passed the first test.

Even in this first application, the Hypothesis was not tautologous. It was conceivable that the individual would prefer the certainty of \$500 to any prospect (\$1,000, p; \$0) for *any* p what-

[1] The axioms require that he be indifferent at one and only one p. Tests have already shown that this perfect consistency is never encountered, but "indifference" might be defined stochastically (*e.g.*, if an individual rejected a prospect with given odds as often as he accepted it, he might be said to be "indifferent" to it).

ever: perhaps from extreme conservative principles or moral scruples against gambling. The Hypothesis would then imply that it was possible to find a number U_{500} satisfying both the following two relationships:

$$0 < U_{500} < 10 \tag{5.1}$$

and

$$U_{500} > p \cdot 10 + (1 - p) \cdot 0, \text{ for } \textit{all } p,\ 0 < p < 1. \tag{5.2}$$

But no such number exists; for any given U_{500} satisfying (5.1), there would exist a p, such that (5.2) would not hold. Therefore the Hypothesis would be contradicted.

Similarly, the Hypothesis would be contradicted if the individual should prefer any prospect ($1,000, p; $0) to the certainty of $500; say, from an obsession with gambling.

It might seem that such behavior might well occur, thus rejecting the Hypothesis on the basis of one observation. But proponents of the Hypothesis could point out that it is unusual to have such " absolute " likes or dislikes: to feel so strongly either for or against gambling as to ignore entirely the relative stakes and odds.[1] They might suggest that such behavior, though it may exist, is statistically unimportant, so that it is reasonable to hypothesise that there will be *some* $\dot{p}$ at which the subject will be indifferent. A man with a marked taste for security might pick $\dot{p} = 9{,}999/10{,}000$; a born gambler might indicate $\dot{p} = 1/1{,}000$. In either case it would be possible to find a number U_{500} consistent with these preferences.

Thus, the Hypothesis puts very weak limitations in this initial application to the man's preferences among risky alternatives. The drastic test is to investigate whether or not his *other* choices will be " consistent " with this first choice. Let us return to our original result, $U_{500} = 8$. On the basis of our single observation (fixing $\dot{p}$ at $\frac{8}{10}$) we must be able to predict the individual's choice among any set of prospects involving the three outcomes, $1,000, $500 or $0, with any probabilities. Given any set of prospects, we simply compute the moral expectations of each on the basis of the utility numbers (two of which, in this case, were fixed arbitrarily and the third derived from a single observed choice), and pick the prospect with the highest moral expectancy. No rationale for this procedure has been given here. It is not suggested that the individual makes his choice by a similar calculation. We are merely examining the implications

[1] As John Chipman has put it, this is the " every man has his price " axiom.

of the hypothesis that it is possible to describe his behavior "as though" he did.

Thus, we compute the moral expectation of the prospect ($1,000, ½; $0) as: ½ . 10 + ½ . 0 = 5. If, when confronted with the choice between this prospect and the certainty of $500 ($U_{500} = 8$), our subject does not definitely prefer the latter, then it is not true that moral expectations computed on the basis of our utility numbers arrange prospects according to the individual's actual preference; our triplet does not have properties of a von Neumann–Morgenstern index. More than that, if this triplet is not one of those whose existence is implied by the Moral Expectations Hypothesis, *then no such triplet can be found*, and the hypothesis is thereby invalidated. For, once two numbers had been arbitrarily chosen, the third one was uniquely determined by our initial observation;[1] any other value for U_{500} would be inconsistent (in terms of our hypothesis) with that particular choice.

If, on the contrary, no serious[2] inconsistency appears, we can proceed to find utility numbers for other sums of money. If we observed that the subject was indifferent between $200 and ($500, ¼; $0), we would define $U_{200} = 2$. Our set of utility numbers corresponding to $0, $200, $500 and $1,000 is now 0, 2, 8, 10. If these are the unique set implied by the Hypothesis, then the individual should be indifferent between a 50–50 chance of $0 or $1,000, and a 50–50 chance of $200 or $500, since: ½ . 0 + ½ . 10 = ½ . 2 + ½ . 8. If, in fact, he prefers one to another, then the existence theorem is contradicted; the axioms on which it may be based do not apply to this individual.

More complicated tests can be devised. One of the "prizes" in a prospect might be another prospect, say, a "lottery ticket" offering a ⅘ chance of $1,000 and a ⅕ chance of $0; if the other prize is $200, the two prizes being offered at equal odds, this would appear in our notation: ($200, ½; ($1,000, ⅘; $0)). This "complex" prospect might be compared to the "simple" prospect: ($500, ⅝; $0). The person "should" be indifferent between them, since:

$$\tfrac{1}{2} \cdot 2 + \tfrac{1}{2}(\tfrac{4}{5} \cdot 10 + \tfrac{1}{5} \cdot 0) = \tfrac{5}{8} \cdot 8 + \tfrac{3}{8} \cdot 0$$

A new test would be to confront the subject with a choice between the above complex prospect and the simple prospect with

[1] Since indices satisfying the Hypothesis are determined "up to two arbitrary constants," the specification of two values determines the index uniquely.

[2] In a real experiment we would have to decide in statistical terms what to regard as a "reasonable" approximation to consistency with the Theorem.

three prizes: (\$1,000, $\frac{2}{5}$; \$200, $\frac{1}{2}$; \$0, $\frac{1}{10}$). Suppose that U_{200} is yet to be computed, and that the individual is found to prefer the complex "lottery ticket" to the above simple one. Then the Hypothesis would imply that a number U_{200} can be found satisfying both:

$$(6.1) \quad 0 < U_{200} < 10, \text{ and}$$

$$(6.2) \quad \tfrac{2}{5} \cdot 10 + \tfrac{1}{10} \cdot 0 + \tfrac{1}{2} \cdot U_{200} < \tfrac{1}{2}(\tfrac{4}{5} \cdot 10 + \tfrac{1}{5} \cdot 0) + \tfrac{1}{2} \cdot U_{200}$$

Since (6.2) implies $U_{200} < U_{200}$, it is clearly impossible to find a number with the desired properties.

Von Neumann and Morgenstern's controversial Axiom 3 : $C : b$[1] rules out this type of behavior by assuming that a person will be indifferent between two prospects which are derivable from each other according to the rules of probabilities. By application of these rules, any complex prospect offering other prospects as prizes may be reduced to a simple prospect, and the axioms requires the individual to be indifferent between this derived prospect and the original one. This implies that the individual is indifferent to the number of steps taken to determine the outcome. On the contrary, a sensible person might easily prefer a lottery which held several intermediate drawings to determine who was still "in" for the final drawing; in other words, he might be willing to pay for the possibility of winning intermediate drawings and "staying in," even though the chances of winning the pot were not improved thereby. A longer time-period of suspense would usually also be involved, but it need not be. The crucial factor is "pleasure of winning," which may be aroused by intermediate wins even if one subsequently fails to receive the prize. Many, perhaps most, slot-machine players know the odds are very unfavorable, and are not really motivated by hopes of winning the jackpot. They feel that they have had their money's worth if it takes them a long while to lose a modest sum, meanwhile enjoying a number of intermediate wins—which go back into the machine to pay for the pleasure of the next win. Von Neumann and Morgenstern single out axiom 3 : $C : b$, which excludes this type of behavior, as the "really critical" axiom [2]—"that one which gets closest to excluding a 'utility of gambling.'" [3]

The final major test of the Hypothesis would be to give the subject a choice between two such prospects as (\$500, p; \$1,000) and (\$200, p; \$1,000), where p is the same in each and where \$500

[1] Von Neumann and Morgenstern, *op. cit.*, p. 26. [2] *Ibid.*, p. 632. [3] *Ibid.*, p. 28.

is preferred to \$200. For any p he must prefer the first to the second. If, for example, he was indifferent between them at some $p = P$, the Hypothesis would imply that there was a U_{500} such that:

$$(7.1) \quad 2 < U_{500} < 10, \text{ and}$$

$$(7.2) \quad P \,.\, U_{500} + (1 - P)10 = P \,.\, 2 + (1 - P)10.$$

Together these imply that $U_{500} > 2$ and $U_{500} = 2$, which can be true of no number (we are assuming in this example that U_{500} has not already been determined by some other experiment).

It is the "Strong Independence Axiom" ruling out this sort of preference which Samuelson has emphasised, presenting it as the "crucial" axiom.[1] It seems rather hard to justify this emphasis, since the axiom seems indubitably the most plausible of the lot. After all, all of the axioms are necessary to the final result, and this particular one is almost impregnable (even people who did not follow it in practice would probably admit, on reflection, that they should) whereas others (such as $3 : C : b$) are contradicted by much everyday experience. One might almost suspect Samuelson, who counts himself a "fellow traveller"[2] of the von Neumann–Morgenstern theory, of using the axiom (his invention) as a man-trap, luring critics past the really vulnerable points to waste their strength on the "Independence Assumption."[3]

In all this it has been emphasised that the Hypothesis on Moral Expectations sets a double condition for an acceptable index, the first part being that it must be one of the individual's ordinal utility index. Some critics seem to have overlooked this; for example, I. M. D. Little:[4]

> "Suppose that . . . we had given C, A, B, the utility numbers $10\frac{4}{5}$, 10, 9, because the consumer was 'indifferent' between (A certain) and (C with probability $\frac{5}{9}$ or B with probability $\frac{4}{9}$). It follows that . . . if the consumer is given the choice between B and A, A must be taken. In fact B might well be taken."

[1] Samuelson, "Utility, Preference, and Probability," *op. cit.* Also, "Probability, Utility, and the Independence Axiom," *Econometrica*, October 952, p. 672.

[2] Samuelson, "Probability, Utility, and the Independence Axiom," *op. cit.*, p. 677.

[3] Dr. Alan S. Manne's article, "The Strong Independence Assumption—Gasoline Blends and Probability Mixtures," *Econometrica*, October 1952, p. 665, gives an interesting example of a physical situation in which superposition does not apply, which may be more relevant to linear programming than to the present subject. Although it raises a doubt, I do not think his criticism is really damaging in this context. The argument in the same issue by H. Wold, "Ordinal Preferences or Cardinal Utility?" is definitely invalid.

[4] I. M. D. Little, *A Critique of Welfare Economics* (Oxford, 1950), p. 30.

If, as the last sentence suggests, the consumer preferred B to A (and C to both), we would start the experiment with this information. If we should then observe that he was indifferent between A and $(C, \frac{5}{9}; B)$, then we would not be able to assign any utility number at all to A, for it would be impossible to find one satisfying the two conditions: $U_a < U_b < U_b$ and $U_c = \frac{4}{9} . B + \frac{5}{9} . C$. This behavior contradicts the Hypothesis, but the conflict would show up in the impossibility of finding a von Neumann–Morgenstern index, not in the index, once having been " certified," turning out to be inconsistent with ordinal preferences. This is a small point, but criticism which may be quite pertinent loses force if framed in a way that suggests the critic has not understood the conditions of the experiment.

Another type of criticism that goes wide of the mark uses examples involving only " utils," with no mention of the sums they represent or the particular observations on which they were based. Baumol, for example, cites two lottery tickets with prizes expressed in utils (*i.e.*, utility units, rather than money).[1] He computes their moral expectations, but asks, " Yet who is to say " that it is " pathological " for the subject to prefer the one with the lower expectation. To this a defender can retort: (*a*) Baumol gives no indication that the utility numbers were correctly derived; (*b*) it would not, of course, be " pathological " in any case; but (*c*) if it happened that the utility numbers were actually derived, for example, from the person's previous choice between the very two prospects cited, then it would be " inconsistency " of a sort usually defined as non-rational for him to switch his choice on this occasion. The crux of the matter is that it is impossible to decide on intuitive grounds whether it is " plausible " to choose the prospect with the higher moral expectation if only utils are cited and if the person's past choices are not known, since an appraisal of " plausibility " must be based on the money sums involved and on the person's pattern of behavior in risk-situations.

We have described above the main types of behavior that conflict with the Hypothesis on Moral Expectations. It is possible to give long lists of factors in risk-situations which would lead to these types of behavior.[2] Among those which have not

[1] William Baumol, " The Neumann–Morgenstern Utility Index—An Ordinalist View," *Journal of Political Economy*, February 1951, p. 65.

[2] Maurice Allais, in " Notes théoriques sur l'Incertitude de l'Avenir et la Risque " (as yet unpublished), and Professor Robert Bishop, in a paper that has not been published as yet, outline these considerations in detail.

been mentioned earlier are: feelings of skill, or, in general, the feeling that the "real" odds are more favorable than the stated odds (*e.g.*, belief in personal luck, or in "winning streaks"); inability to compute compound probabilities, and thus to derive simple prospects from complex ones; influence of the other elements in the risk-situation besides the money prizes and the probabilities—*e.g.*, the atmosphere of the gaming-room. The Theorem could possibly be framed so as to allow for these considerations, but in any practical application they would undoubtedly have some effect.

Whether or not these factors would lead to *serious* inconsistency is open to question; it seems very likely that they would in the field of gambling, but Samuelson suggests that they may be less important in business and statistical problems.[1]

The only laboratory test of the Hypothesis has been performed by Professor Frederick Mosteller, who derived utility curves for a group of subjects on the basis of their choice among simple gambles, and used these data to predict their choices among other and more complicated gambles.[2] The experiment side-stepped pitfalls which could not be avoided in practical application by abstracting from the major sources of inconsistent behavior: (*a*) all probabilities were known; (*b*) all calculations were performed for the subjects and their misconceptions eliminated;[3] (*c*) only small sums were used; (*d*) no social influences or any "other factors" were present; (*e*) behavior was observed only in one special risk-context (and that an artificial one). The fact that Mosteller found only mild consistency despite these "ideal" conditions might be interpreted as distinctly unfavorable to the hypothesis (though, considered in themselves, the results were inconclusive).

[1] Samuelson, "Probability, Utility, and the Independence Axiom," *op. cit.*, p. 677.

[2] Frederick Mosteller and Philip Nogee, "An Experimental Measurement of Utility," *Journal of Political Economy*, October 1951, p. 399.

[3] In the first two sessions subjects were not instructed on computing odds, and calculations were not performed for them. Behavior in these sessions was quite different from behavior in the rest of the experiment. Although these interesting results were not discussed in the article cited, Mosteller informed me that a definite finding of the experiment was that all the subjects behaved very differently before and after they had received lectures on dealing with probabilities. Moreover, their behavior showed a trend factor throughout the experiments as they grew increasingly familiar with the various gambles.

Even if the final conclusions had been much more favorable than they were, these observations would have dictated great caution in extrapolating them to situations outside the laboratory.

V

In deriving a " Jevonsian " utility index, we would begin as in the preceding section by assigning two arbitrary values; since, like the von Neumann–Morgenstern index, it is determined up to a linear transformation (if it can be found at all). As before, we might assign the utility numbers 10 and 0 to the outcomes \$1,000 and \$0. To find U_{500}, instead of confronting the individual with a choice between prospects, we would ask him to rank his preference of \$1,000 to \$500 and his preference of \$500 to \$0. Suppose he should tell us that the two preferences were equal; we would then assign the utility number $U_{500} = 5$. But on the basis of the von Neumann–Morgenstern experiment (let us assume that the same individual was the subject) we assigned the number $U_{500} = 8$. Is there not a conflict here?

To anyone who has skimmed the literature in this field it will not be obvious that the two sets of results are independent, hence do not conflict, for certain passages, particularly in *The Theory of Games*, gives quite the opposite impression. A close examination of the texts can, in fact, settle the question definitely. Instead of referring immediately to the literature, however, it is rewarding to examine a more general type of analysis, which might have made the issues intelligible to economists from the beginning.

Bridgman states the central proposition of the operational approach thus : [1]

> " We must demand that the set of operations equivalent to any concept be a unique set, for otherwise there are possibilities of ambiguity in practical applications which we cannot admit. . . .
>
> " *If we have more than one set of operations we have more than one concept*, and strictly there should be a separate name to correspond to each different set of operations."

The word " should " above should be interpreted as meaning that it is *useful*, in terms of certain specific purposes, to adopt the proposed point of view (this applies as well to the word " should " in this sentence). Because of incautious phrasing in his early writing, it has often been thought that Bridgman regarded his own definitions and classifications as logical imperatives. Actually (as

[1] Percy W. Bridgman, *The Logic of Modern Physics* (New York, 1927). The first sentence is on p. 6, the second on p. 10 (my italics).

Although such notions as the meaningfulness and restrictiveness of hypotheses have been made familiar to many economists by followers of Bridgman, the above proposition and the following ones, which are the very heart of the operational approach, are not widely known among economists.

he has since made explicit), it is not necessary to insist on his approach dogmatically or exclusively; without making any unique claims, it is easy to show the value of his point of view (which admittedly is not the most natural) in helping to avoid certain types of confusion.

Of course, in everyday usage we very commonly use the same term to cover different operations, on the grounds that they measure the "same thing." If we take the strict operational point of view that a "thing" is "what is measured by a particular operation," we need not ban the practice of treating two different operations as measuring the "same thing," but we must insist that it be justified by a direct argument. In an important passage, Bridgman indicates the nature of an adequate justification:[1]

> "If we deal with phenomena outside the domain in which we originally defined our concepts, we may find physical hindrances to performing the operations of the original definition, so that the original operations have to be replaced by others. These new operations are, of course, to be chosen so that they give, within experimental error, the same numerical results in the domain in which the two sets of operations may be both applied; but we must recognize in principle that in changing the operations we have really changed the concept. . . . The practical justification for retaining the same name is that within our present experimental limits a numerical difference between the results of the two sorts of operations has not been detected."

It would hardly be possible to find a passage more pertinent to a comparison of the economic theories discussed here. It may be helpful to give some economic illustrations; several examples of pairs of operations which differ but are usually treated as equivalent exist within the boundaries of our discussion.

(1) In the indifference map experiment the operations (*a*) of interrogating the individual as to his preferences, or (*b*) observing his actual choices (Samuelson's "revealed preference"), are usually regarded as alternative.

(2) In the "Jevonsian" experiment two operations are usually thought to be involved: (*a*) inquiring of the subject how he ranks his preferences; (*b*) the subject's own subjective process of "weighing" satisfactions. The first is said to measure differences in satisfaction on the assumption that it approximates the results of the second. The basis of this assumption is that in the area

[1] Percy W. Bridgman, *The Logic of Modern Physics* (New York, 1927); the first two sentences are on p. 23; the third, on p. 16 (in the latter sentence, Bridgman refers to the measurement of length by ordinary and by Einstein's operations).

where they can both be applied—the area of our own introspection —they give identical results (to the extent that we *can* balance satisfactions and that we tell the truth).

(3) In the von Neumann–Morgenstern experiment we used the operation (*a*) of asking the subject to name a $\hat{p}$ at which he would be indifferent; but we also suggested the possibility (*b*) of observing his choices when confronted with various pairs of prospects many times. Mosteller used the latter operation in his empirical tests.

In each case, the alternative operations are regarded as roughly identical. Actually, most economists who have had practical experience in applied theory are well aware that the results of interrogation and of observing actual behavior are almost never identical. Moreover, minor differences in the operations (such as the wording of questions) do " make a difference." [1] When a pair of operations is accepted as measuring the " same thing " it is because the divergence between the results is not regarded as significant. But as the range of application of each operation is widened over time, divergences appear in the area of overlap, and as precision increases, small differences become significant. Too often, theorists are unprepared for these phenomena and are thrown into confusion at the emergence of ambiguity and paradox.[2] One who accepts the propositions of the operational approach, on the other hand, not only expects these problems to arise but also knows where to watch for them. This (and nothing more pretentious) is the chief virtue which is claimed for the approach.

The relevance of the above discussion to the present problem can now be stated. Probably many readers of *The Theory of Games* and some later articles have received the impression that the third pair of operations above was being proposed as " measuring the same thing " as the second pair. In other words, many have interpreted the von Neumann–Morgenstern experiment as a more precise or practical, though indirect, approach to the results of the Jevonsian experiment: *i.e.*, basically, to the results of the subjective calculation of satisfactions. But if the operational point of view were more common as a habit of thought, readers would have placed the burden of proof on the (supposed) exponents of such an equivalence, challenging them to exhibit

[1] The operational approach may be useful in reminding us that differently worded questionnaires measure, in general, " different things."

[2] Such confusion was prevalent in physics prior to the revolutionary theories of Einstein and Planck. The operational approach was proposed as a means of avoiding such a state of mind in the future.

evidence. In fact, as they would have discovered, there are no such exponents. And the evidence does not exist, for in general the two operations do not produce even approximately the same results.

Let us recall the results of our hypothetical von Neumann–Morgenstern experiment: $U_0 = 0$, $U_{200} = 2$, $U_{500} = 8$, $U_{1,000} = 10$. If the von Neumann–Morgenstern index for this individual were plotted as a function of money incomes, interpolating a smooth curve, the graph would be concave upward between \$0 and \$500; in this range it would show "increasing marginal utility." This shape would reflect merely the fact that in this range of money outcomes the individual accepted "unfair" bets and that his choices among prospects showed consistency of a certain type.

In contrast to this, Marshall and Jevons predicted almost unconditionally one general feature of a "utility" curve derived from an experiment of the Jevonsian type; it would be concave downwards throughout its whole length, exhibiting non-increasing marginal utility at all points. Among those economists who believe that a Jevonsian experiment can have consistent results at all, few have ever disputed this opinion.

If Marshall's prediction does hold, then the numbers inferred from the two experiments will certainly conflict for any person who is observed to accept a gamble at odds which are not distinctly favorable, let alone odds that are actually unfair. If such a person has a von Neumann–Morgenstern index it will have a range of increasing marginal utility, which is assumed to be contradictory to the Jevonsian index. Marshall himself pointed out that there were such people, even among those otherwise "rational."

Thus we can state: the von Neumann–Morgenstern and Jevons–Marshall operations do *not* measure the "same thing." The former do not simply tend to measure the Marshallian "utilities" with greater precision, *i.e.*, to a higher number of significant figures. In general, the ranking of first differences in "utility" as a function of money will be different, depending on which "utility" is being measured; if the functions are continuous, the second derivatives will not in general have the same sign.

To those who accepted the apparent inference that the gambling operation allowed an "estimate" of the results of a Jevonsian experiment, a moment's thought should have suggested the question: Why is an estimate necessary? If risk-behavior

reveals something about differences in satisfaction, presumably it is because those differences in satisfaction are the decisive factor in decision-making. But in that case we might as well ask about satisfactions directly.[1]

This discussion has not established yet that von Neumann and Morgenstern do not themselves regard their operation, mistakenly, as measuring differences in satisfaction. The evidence for this is their repeated rejection of the notion that an individual reaches decisions in risk-situations by calculating differences in utilities, their brand or any other (such as Jevonsian utilities). But much confusion probably stems from the fact that they are prone to write in large, clear type about comparing differences in preferences and to discard such notions in fine print at the bottom of the page. Thus, they formulate their " continuity " axiom (which rules out the " absolute " rejection of lottery tickets or the " absolute " love of gambling discussed earlier) as follows : [2]

> " No matter how much the utility of v exceeds . . . the utility of u, and no matter how little the utility of w exceeds . . . the utility of u, if v is admixed to u with a sufficiently small numerical probability, the difference that this admixture makes from u will be less than the difference of w from u."

This leaves a strong impression, to put it mildly, that the notions of quantity of utility and differences in quantities are an integral part of the argument . . . unless the reader follows a footnote on to the next page : [3]

[1] It is perhaps conceivable, though unlikely, that his feelings of satisfaction might be difficult for an individual directly, being only semi-conscious, though influencing his behavior. But if it were true that his risk-behavior was a reliable and convenient guide to his feelings of differences in satisfaction, this would ensure that the Jevonsian experiment *could* always be performed. For even if the subject were an economist, say, who detested introspection, he could note tacitly his reactions to hypothetical lottery tickets (or even, if conscientious, plot his behavior at bingo games and horse races) before replying to questions about differences in satisfaction.

*On the other hand, to say that the Jevonsian experiment cannot lead to consistent results is to say that any consistency revealed by the von Neumann–Morgenstern experiment is not closely related to satisfaction.

[2] Von Neumann and Morgenstern, *op. cit.*, p. 630. Since the content of this passage is not under discussion, the reader is advised to pass his eyes over it rather swiftly.

[3] *Ibid.*, p. 631 n. This is not the only time in their book that the authors introduce notions in a " literary " discussion of their theorems that they simultaneously disown, informing the reader that it all comes out in the axioms. Of course, the very inclusion of a verbal discussion is a concession to non-mathematicians; but one can do only so much in the name of " heuristic devices." It is not a recommendation of the empirical relevance of axioms to say that they can be made plausible in literary translation only by identifying them with notions (such as subjective utility differences) which are actually irrelevant.

> "The reader will also note that we are talking of entities like 'the excess of v over u,' or 'the excess of u over v' or (to combine the two former) the 'discrepancy of u and v' (u, v, being utilities) merely to facilitate the verbal discussion—they are not part of our rigorous, axiomatic system."

One other passage in the "literary" discussion is probably the greatest single source of misunderstanding; it concerns a situation in which an individual is offered a choice between a sure outcome, A, and a 50–50 chance of B or C, where C is preferred to A and A to B [1]:

> "any assertion about his preference of A against the combination contains fundamentally new information. Specifically: If he now prefers A to the 50–50 combination of B and C, this provides a plausible base for the numerical estimate that his preference of A over B is in excess of his preference of C over A."

This passage seems clearly to imply that the von Neumann–Morgenstern operation aims at the same "entities" (*i.e.*, utility differences) as the Jevonsian experiment, being merely more indirect. But again, the crucial withdrawal is in the footnote: [2]

> "Observe that we have only postulated an individual intuition which permits decision as to which of the two 'events' is preferable. But we have not directly postulated any intuitive estimate of the relative sizes of two preferences —*i.e.*, in the subsequent terminology, of two differences of utilities."

The equivocal word here is "estimate." This implies that the procedure tries to approximate the results of an introspective operation. Actually, in the von Neumann–Morgenstern experiment described above utility differences were not "estimated" but computed exactly. They were related precisely to certain risk-choices; no other evidence, intuitive or otherwise, was allowed to influence the results.

The authors themselves point out the ambiguity:

> "Are we not postulating here—or taking it for granted—that one preference may exceed another, *i.e.*, that such statements convey a meaning? Such a view would be a complete misunderstanding of our procedure." [3]

Their procedure is actually to use the risk-choices to *define* the utility differences—to make this notion meaningful in a new way —not to "estimate them." Very likely it was the above passage which led Professor D. H. Robertson to imagine that von Neumann

[1] *Op. cit.*, p. 18. [2] *Ibid.*, p. 18 n. [3] *Ibid.*, p. 20.

and Morgenstern had proposed a method for estimating relative differences in desirability. It is easy to spot this inference in his critical account of their theory : [1]

> " Thus in the case of a man who does not know how to choose—*i.e.*, who chooses by the toss of a mental coin—between the certainty of B and an even chance of A or C, these authors offer 1 as a measure of the ratio of AB to BC. . . . But it is clear that this would only be *true* for a particular type of man, namely, one who is content to be governed entirely by mathematical expectations. . . . " (My italics.)

In the case of the behavior described, von Neumann and Morgenstern would *define* the ratio of utility differences as 1; and in a matter of definition there can be no question of truth and falsity. Those standards could be applied only to a *hypothesis* that the scale defined by von Neumann and Morgenstern bore some empirical relation to some other data, not involving risk : for example, the hypothesis that it approximated the results of a Jevonsian measurement. It is clear from the context of Robertson's remarks that he believed, like most readers, such a hypothesis was implied. It has been the argument of this paper that this belief is mistaken.

In the same passage Robertson adopts essentially the Marshallian position : [2] " . . . we can make no sense of his actions in the face of uncertainty without supposing that he can form some estimate of the relative difference in desirability between pairs of situations." Whatever the plausibility of this argument, it has no relevance to the von Neumann–Morgenstern theory. Where Marshall postulated a type of " consistency " between men's risk-choices and their feelings of relative differences in desirability of the outcomes, von Neumann and Morgenstern hypothesise simply a consistency between risk-choices and other risk-choices. By coincidence, it happens that the particular form of " consistency " prescribed by Marshall (he might well have chosen some other rule than the maximisation of " expected utility ") would imply von Neumann–Morgenstern " consistency "; though not vice versa. A man who had a Jevonsian index *and* who obeyed Marshall's dictum would have a von Neumann–Morgenstern index; but the existence of the latter index implies neither of the first two conditions (and the existence of the former index implies neither of the last two conditions).

[1] D. H. Robertson, *Utility and all That* (London, 1952), p. 28. [2] *Ibid.*, p. 28.

Thus the von Neumann–Morgenstern axioms cover all those who are "rational" in the Marshallian sense; in addition, they may apply to others who would be "irrational" in Marshall's terms, *e.g.*, bettors who accepted unfair bets [1]: and still others for whom no Jevonsian index can be defined.

Von Neumann and Morgenstern describe their procedure thus: "We have practically defined numerical utility as being that thing for which a calculus of mathematical expectations legitimate." [2] The word "practically" is unnecessary; from an operational point of view, they *have* so defined it. Does such a "thing" exist? Friedman and Savage have emphasised the use of the axioms, which put definite restrictions on behavior, as a basis for testable and fairly powerful predictions concerning risk-choices.[3] *Should* it exist? Marschak has proposed that the axioms be regarded as defining "rational" behavior in risk-situations; according to this view, which no other writer has supported, the axioms are of interest for normative purposes, even if no one actually does conform to them.[4]

Von Neumann and Morgenstern cited only the descriptive aspect of the theory. They were not particularly interested in predicting or prescribing people's preferences among prospects, but merely in describing them in terms of mathematical expectation: a necessity in their own theory of games, a convenience in any context. This original view of the subject, by far the least pretentious, is probably the most appropriate. The emphasis by Friedman and Savage on the meaningfulness of the hypothesis obscures the fact that many other hypotheses are just as meaningful, perhaps more useful, and even more convenient for predictive purposes (though not for description). For example, hypotheses in terms of parameters of the *money* distribution, such as mathematical expectation and variance, might produce fully as good predictions as those based on a derived von Neumann–Morgenstern index, and they would certainly be easier to test. As for the normative aspect, there seems very little reason to advise a man who is extremely reckless (or excessively conservative) in

[1] The theory, since it allows for this sort of behavior, cannot be said to rule out all forms of "pleasure in gambling." But proponents have rather overplayed this point. Although acceptance of unfair bets does not contradict the theory, there is ample behavior which does, including some other forms of "pleasure in gambling."

[2] *Op. cit.*, p. 28.

[3] Friedman and Savage, *op. cit.*

[4] Marschak, *op. cit.*, p. 139; also, "Why 'Should' Statisticians and Businessmen Maximise 'Moral Expectation'?" *Proceedings of the Second Berkeley Symposium on Mathematical Statistics and Probability* (Los Angeles, 1951), p. 493.

some of his risk-choices that he should be consistently reckless (or conservative) in his remaining risk-choices. Nor does it seem that a person who behaves approximately in accordance with a von Neumann–Morgenstern index would be in any sense better off if he behaved *more* in accordance with it. If these conclusions are accepted (and von Neumann and Morgenstern would probably accept them), then one must answer the question, " What does it matter whether such a ' thing ' exists ? " very conservatively.

At any rate, it should be clear that Baumol's impression that " Neumann and Morgenstern consider the utility index obtained by them as the *only* true one " [1] is quite mistaken. So far as behavior under certainty is concerned, only the ordinal features of the index are relevant. The only numerical operation permitted is that of forming mathematical expectations, which is related to risk-behavior; it makes no sense, for example, to *add* von Neumann–Morgenstern utilities. The cardinal features of the index—the relative differences between utility numbers—are used only to predict or describe risk-behavior, and, moreover, are derived solely from risk-behavior. Therefore the results of a von Neumann–Morgenstern experiment cannot be " checked " against the results of any experiment not involving risk-choices. This applies to simple introspection, to the Jevonsian experiment, and also to other attempts to base a cardinal utility on consumer behavior.[2] These latter have been rather thoroughly discredited by Samuelson and others because of their use of special unrealistic assumptions. But the existence or non-existence of a von Neumann–Morgenstern index and the existence of " measurable " indices based on these other operations are entirely independent matters. Each method might, out of the whole set of ordinal utility indices, select a different subset of indices reflecting some type of data in addition to preferences; if the indices inside each subset were related by linear transformations, each method would result in *a* " measurable " utility index. These indices might have entirely different shapes, but so long as they did not entirely overlap in application, there would be no need to single out any one of them as being the " true " utility index. Certainly von Neumann and Morgenstern make no such claims for their construction; they cite only its convenience in

[1] Baumol, " The Neumann–Morgenstern Utility Index—an Ordinalist View," *Journal of Political Economy*, February 1951, p. 61.

[2] See Robert Bishop, " Consumer's Surplus and Cardinal Utility," *Quarterly Journal of Economics*, May 1943. For criticism of these approaches see Samuelson, *Foundations of Economic Analysis*, pp. 174–9.

formalising risk-behavior. There is no reason to believe that a "measurable utility" derived by some other method could do this; [1] on the other hand, the von Neumann–Morgenstern index could not do the main jobs for which other constructions are intended. It would be of no aid whatsoever in formalising consumer behavior under certainty (the goal of the Fisher–Frisch constructions: see Bishop, *op. cit.*), nor would it seem to be of any relevance in welfare evaluations (whereas a Jevonsian index might be).[2] If it is true, as Professor Robertson has complained, that von Neumann and Morgenstern have actually done harm to "the cause" of creating acceptance for a measurable utility with these last two objectives,[3] this is but a measure of the general misinterpretation of their results: a confusion for which they cannot evade all responsibility.

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[1] Thus, Alchian is mistaken in asserting that "measurability 'up to a linear transform' both *implies* and is implied by the possibility of predicting choices among uncertain prospects, the universal situation" ("The Meaning of Utility Measurement," p. 49 (my italics)). Actually, it is easy to conceive a "measurable" utility index which is neither derived from nor used to predict risk-behavior.

[2] After I had reached these conclusions, I had the great benefit of conversation with Professor Oskar Morgenstern, who was kind enough to read and discuss with me an earlier version of this paper. Professor Morgenstern confirmed what were then speculations on the implications of the theory; he particularly confirmed that he and von Neumann had envisioned only limited application, to risk-behavior alone.

[3] Robertson, *op. cit.*, p. 28.

REVIEWS

The Future of Sterling. By A. C. L. Day. (London: Oxford University Press, 1954. Pp. vii + 227. 12*s.* 6*d.*)

In the course of this thoughtful and extremely readable little book, Mr. Day examines anew a number of well-worn and important themes: the nature and significance of the "dollar problem"; the advantages reaped and the dangers incurred by the practice of discrimination in foreign trade; the genesis, structure and internal strains of the Sterling Area; the respective merits and drawbacks of fixed and mobile exchange rates. The analysis throughout is acute, the attitude fair-minded, the language temperate. On the main issue, whether the world can expect a complete and permanent solution of the "dollar problem," the author professes himself unable to reach a firm conclusion.

Nevertheless, this is very definitely a book with a thesis, and a challenging and provocative one; it is (p. 6) that the "generally accepted British policy of maintaining and reinforcing London as the chief pivot of the world payments system is ill-advised." The wide use of sterling as an international currency, so runs the argument, is an illogical survival of the days when Britian was the predominant economic power; it has been fortuitously prolonged by the very acuteness of the power-war dollar problem, enabling the pound to strut and posture as *primus inter secundos*. If a unified and liberal Western system of trade and payments *can* be re-established the pound's pretensions will stand unmasked; if it *cannot*, the attempt to glorify the pound will continue to expose the British economy to strains and costs out of all proportion to the admitted advantages.

This thesis is worked out with reference first to Britain's position *vis-à-vis* her Sterling Area partners and then to her position *vis-à-vis* the non-sterling non-dollar world, that is to say, predominantly, Western Europe. Britain, Mr. Day thinks, has enjoyed the lion's share of whatever net benefit accrues to the Sterling Area from the policy of joint discrimination against dollar goods; but the Outer Area has had the lion's share of whatever advantages the Sterling System confers in the way of convenience and stability, as well as the use of British savings to build the milk-

bars and luxury flats proscribed within Britain's own borders. As progress is made therefore towards unification of the trading world, Britain's net benefit from the Sterling System declines both absolutely and relatively to that of her partners. As regards Europe, Mr. Day fears lest the accord of dollar-convertibility to foreign holders of sterling, coupled with the maintenance of restrictions on dollar purchases at home, should lead to a situation in which Britain (p. 151) "has removed the dollar problem of practically all other nations but still has one of her own," so that "after paying most of the costs of removing world discrimination she will be blamed for being the only illiberal country left."

Mr. Day is not content to rest on these negative conclusions, but outlines an ingenious alternative system of world payments, based on an extension of the functions of the European Payments Union. Briefly, the idea is that the net payments (if any) due from each non-dollar country to the dollar countries should be made through the Union. Payments by the Union to the dollar countries would be made only in gold.

> "When payments of the Union as a whole with the dollar bloc are in balance, individual members could settle their balances arising from American trade in just the same way as they settle their balances arising from European trade; that is, partly in gold and partly in credit, the proportions depending on the cumulative position of their accounts with E.P.U. In those circumstances individual members would have no incentive to discriminate against payments to America. When, however, payments of Union members as a whole to America show deficit, then members would clear the American part of their accounts wholly or more predominantly in gold, and so would have an incentive to discriminate against America" (pp. 10–11).

America's co-operation would be required to the extent of declining to receive gold from any source except the Union itself, and, if she felt so moved, of giving the system a good start by means of a stabilisation loan to the Union. But she would not be called upon to depart from her settled resolve not to treat anything as international money except gold and dollars; while at the same time the plan would meet the need of the reserve-hungry non-dollar world for its central monetary organ to be a true bank—a potential *creator* as well as a mere transmitter of international money.

I do not myself think it likely that things will happen in Mr. Day's way. Other alternatives, since his book was written, have begun to lift their heads above the horizon. And, while I share

some of his fears, I think the prospects for Britain and her currency are quite a bit brighter than Mr. Day will allow. In the long spectrum extending between those who dismiss the "dollar problem" as nonsense and those who hug it to their breasts, I find myself nearer than him to the Erhardian, farther from the Baloghian, extremity. If I miss anything in his book, it is the tough insistence on the importance of internal monetary discipline which pervades an almost contemporary study of the weaknesses of the Sterling Area—Sir Sydney Caine's trenchant essay in the April 1954 *Lloyds Bank Review*. Almost the only place where I feel inclined to cry out upon Mr. Day's smooth tolerance is that in which (p. 105), after conceding that "criticisms of the Dalton episode are largely to the point," he defends the "euthanasia of the rentier" as a reasonable objective, and claims that "the cheap money policy was by no means the unmitigated evil it is often painted to be, and there is no reason to suppose it may not become respectable again, *even in prosperous times*" (my italics)!

So the kicks which this reviewer has himself received for his lack of faith and courage from those to the rumbustious right of him in the convertibility spectrum he respectfully transmits to Mr. Day's posterior, with his warm congratulations on writing a book which, for its matter and its style, deserves to be read and pondered by all those concerned to form or to influence British policy—even if some of them rise from its perusal with a determination not so much to follow Mr. Day's advice as to make sure that he is proved wrong.

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International Economics. By C. P. KINDLEBERGER. (Homewood, Illinois: Richard D. Irwin, 1953. Pp. ix + 543. 64*s*.)

THIS is a new text-book on international economics by the distinguished author of *The Dollar Shortage*. It is intended for students with at least one full year of elementary economics behind them, but the author admits that more rapid progress can be made if it is read at a later stage. The reviewer would go further and suggest that some second-year students may find a good deal in it that they cannot fully understand. International economics is an advanced branch of the subject which requires a knowledge of nearly all other branches, both theoretical and applied.

This is a long book of over 500 pages, with more than 100 diagrams and tables. In view of its wide scope it is not easy to see

how it could have been shortened. The author admits frankly that there is a good deal of repetition, but any teacher knows how difficult this is to avoid. There are also several digressions on subjects not strictly within the field of international economics, but these are always useful. One of the most important is that on economic development and growth. It is desirable to emphasise this topic both to show the importance of dynamic considerations and the shortcomings of purely static analysis and to illustrate some of the ways in which a classical theory, based to a considerable extent on economic institutions in Britain and other advanced countries, may not be wholly applicable to under-developed areas.

The book is up to date, and the theoretical contributions and practical lessons of the post-war years are not just tacked on as a rather uneasy addendum to the pre-war body of knowledge. They are woven into a general analysis that makes the book a useful statement of the present position of international economics.

The approach is in general theoretical rather than historical or institutional (although, as would be expected from an author of such wide practical experience, there are numerous useful illustrations drawn from many countries). Professor Kindleberger justifies his approach on the grounds that " if the student fails to gain from his course in international trade a capacity to analyse, his recollections that the Corn Laws were repealed in 1846 (and that corn is really wheat), that the investment guarantees under the E.C.A. program covered this risk but not that, or that free trade is good, tariffs bad, will have little meaning for him."

This is obvious common sense, and it is certainly possible to present the old-established theories in a form that will train the student in analysis. But is the same true of more recent developments? Do we yet know enough about economic growth, for example, to generalise in a way that may not sometimes be misleading? Then, again, many recent contributions to theory have served to show merely how unsatisfactory is the older analysis. Thus, the repercussions of exchange-rate depreciation are far more complicated than the classic pre-war analysis of Mrs. Robinson would suggest (although her analysis should still be an essential part of the student's course). It is now recognised that the long-run effects of any policy in the international field are most uncertain when dynamic considerations are taken into account. And even if we could foresee these consequences we are now more aware of the difficulty of prescribing the correct policy when there are so many political difficulties and conflicting goals—efficiency, stability, equity between and within nations, and so on.

What, then, is the teacher to do? If he is realistic and explains all the difficulties and all the possible outcomes, the student may be simply bewildered. If he sticks to more straightforward theories with over-simplified assumptions, the student will have more chance of acquiring a power to analyse, but he may be given dangerously false impressions of the real nature of the problems.

Professor Kindleberger has made a brave attempt to steer a middle course and produced a notable text-book for which teachers and students will be grateful. He says that among theorists he passes as " a man of affairs," and it is certain that no student who has carefully studied his book will be left with the impression that there are easy or clear-cut solutions to the international economic problems of the modern world. It may be that some will get more out of his practical illustrations of the post-war problems of, say, Germany, Italy and Britain than from his interesting theoretical discussions of " structural disequilibrium at the factor level " or his generalisations about the views of " liberals " and " planners." But the good student will recognise in this book a real attempt to grapple with the very difficult problems of our day and to provide a coherent analytical framework, much of it not to be found in other text-books, within which they can be studied.

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American Foreign Assistance. By W. A. BROWN and R. OPIE. (Washington, D.C.: The Brookings Institution, 1953. Pp. v + 615. $6.)

MESSRS. BROWN AND OPIE have provided in this book the first comprehensive account and considered appraisal of foreign-aid operations for the period beginning just before lend-lease assistance and ending in December 1952. Over the twelve years, gross assistance of some $94 billion was extended by the United States to other countries. After deducting repayments and assistance by other countries to the United States, the amount of net foreign assistance extended by the United States was over $80 billion in this period. Throughout the period, the United States gave this assistance on an emergency basis as a means of pursuing the political, military and economic objectives of its foreign policy. The amount was more or less evenly divided between the war-time and post-war programmes. Since mid-1950 increasing emphasis has been placed on the military objectives of assistance, as can be inferred from the fact that more than two-thirds of the $6

billion of assistance authorised by the Mutual Security Act of 1952 for the fiscal year 1953 was designated " military assistance." Further emphasis on military assistance and less on other forms of assistance is implied if the slogan " trade not aid " is to play a part in the development of future American policy. It is, moreover, an emphasis accepted in the report of the Randall Commission.

The account of foreign-aid operations contained in this book will remain the standard reference until official documents are made available both here and in the United States. It is, therefore, more useful at this point to consider their assessment of the assistance programmes. In this appraisal there are striking contrasts with the relevant sections of the report of the Randall Commission. Foreign assistance has been an, if not the, outstanding feature of the foreign policy of the United States, but whereas Brown and Opie consider it in the context of American foreign policy, the Randall Commission does not do so. Herein lies the strength of the book and the weakness of the report. Brown and Opie crisply say that, " In the future, as in the past, foreign assistance must be rooted in the interest of the United States, broadly interpreted it is true, but still in the American interest " (p. 580). But they do not conclude, as does the Randall Commission, that " economic aid on a grant basis should be terminated as soon as possible." Their difference does not involve the adoption of a general philosophy of aid, for they accept a flexible, pragmatic basis, as does the Commission. Their difference is one of method : " To ask how much foreign assistance should be given at any time is to ask how much it is necessary or desirable for the United States to assist its allies in building up their national strength. To answer this question calls for the continual exercise of judgement on the basis of changing facts, and no one form of assistance can be excluded in advance, such as would be the result of arbitrarily confining assistance to military end-items " (p. 562).

The same basic difference of approach led the Randall Commission to ignore the problems posed by European integration and Japanese resurgence and to give only passing attention to the problems of under-developed areas. Brown and Opie, however, list and discuss the issues necessary to the reconstruction of the international economic system under four heads : " the pursuit by individual countries (including the United States) of domestic monetary and fiscal policies that will keep their external accounts in balance ; the pursuit of policies in foreign trading relations that will allow goods to flow more easily in international commerce ;

action to increase the gold and foreign-exchange reserves of individual countries as the prerequisite of restoring the convertibility of currencies; and action by all countries to rebuild the network of international investment. The fulfilment of these four requirements is relevant to the outstanding problems of American assistance" (p. 570). Brown and Opie regard the failure to emphasise sufficiently the strengthening of reserves as the weakest link in the whole assistance programme, and recommend such a strengthening "by whatever method is appropriate." With this conclusion the Randall Commission is, of course, in general agreement, though even here the recommendations of the Commission might be thought to fall short of the requirements of countries should a general move towards convertibility be accompanied by a marked decline in American national income.

Providing one accepts the general multilateral-convertibility outlook of the authors of this book, there is little indeed to criticise in their handling. They are as forthright as any European would be to point out inconsistencies in American policy within the field of foreign assistance. They show, for example, that in pricing policy E.C.A. on the one hand tacitly accepted differential pricing under the Schuman Plan, while on the other making a determined effort to apply the principle of a single, free, competitive market on a world-wide scale in respect of petroleum and vehemently opposing dual pricing of European coal supplies. Both the authors and the Brookings Institution are to be warmly congratulated on bringing out so opportunely this important contribution to a major issue in the field of international economic relations. It is earnestly to be hoped that it is given the attention it deserves in the discussions now proceeding in Washington.

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Die Konjunkturschwankungen. By W. A. JÖHR. (Zurich and Tübingen: J. C. B. Mohr, 1952. Pp. 675.)

THIS is the second volume of a comprehensive work by Professor Jöhr, designed to lay the theoretical foundations for economic policy. While the first volume gave a detailed account of equilibrium theory, the present one is entirely devoted to the trade cycle. The policy implications are developed merely in outline, and are relegated to a future third volume.

A mere glance at the table of contents of the treatise under review shows that it is an ambitious attempt at a critical conspectus of the present state of trade-cycle theory. Professor

Jöhr takes nothing for granted, and omits nothing. He devotes two-fifths of the book to laying the empirical and theoretical foundations upon which to build his analysis of economic fluctuations and he travels all the lanes and by-ways that fork off the main highway of research, and he does it not by stating simply his own views, but throughout the book by presenting and criticising theories of others and gradually distilling his own brand of a solution. It is in this sense a learned treatise and, as the author claims, a systematic survey of trade-cycle problems, but it does not offer a positive and rigorous theory of the cycle. Professor Jöhr develops in the concluding chapters a socio-psychological explanation of the basic features of the cycle and sets it against the mechanistic models which he has examined in the middle part of the book. His main argument against all model builders is that they assume a rigid pattern of economic behaviour, and thus tend to overlook, or are forced to disregard, the importance that changing moods and the contagious nature of fears, expectations and so on are likely to have on the relationships of the models.

By making psychological factors, which tend to reinforce each other irrespective of any real causes, the mainspring of cyclical oscillations, and by building into this pattern the various mechanistic factors that operate with varying strength in the different phases of the cycle, we shall get, Professor Jöhr believes, a more realistic approach to the trade cycle. In fact, even this is more than he regards as feasible or desirable. On a note of resignation and agnosticism he concludes that any model, even one with a great many causally significant variables, would yield not only a one-sided but also a deceptive and erroneous picture of the process of economic fluctuations. Trade-cycle research to-day can and should do no more than present a catalogue of the causally important factors and their operation, but should leave the question of their interaction completely open.

Neither these conclusions nor the socio-psychological explanation should, however, be taken as the central theme of the book. The rejection of the so-called mechanistic models and their supplementation by psychological theory stems from an underestimate of their flexibility. They can, of course, incorporate almost all the factors mentioned by Professor Jöhr, such as price changes, expectations or the varying reactions of economic agents in different phases of the cycle. They will naturally become more and more complicated, but it is not the principle of model building that is at fault, but the over-simplification of our text-book models against which Professor Jöhr brings to bear his analytical guns.

These models are, generally speaking, good teaching devices, in the sense that they provide an understanding of the nature of oscillatory processes, but more often than not give poor approximations to actual empirical cycles. They deliberately select only a few significant variables and relationships. But Tinbergen since the thirties, Klein, Clark and others since the War, have produced much more complex and realistic models which Professor Jöhr excludes from the scope of his survey.

What he has to say about the simple non-econometric models and theories extends over the middle 300 pages of the book. As a critical examination of the corpus of modern Continental and Anglo-Saxon theory it knits together many strands of thought and shows their relevance for a fuller understanding of cyclical processes. Partly because of this, it cannot be easily summarised. But its layout will give the reader some impression of its scope and character. Starting from the model of perfect competition, Professor Jöhr proceeds to relax its stringent conditions in four major moves, by introducing: (*a*) the time factor, (*b*) monopolistic conditions, (*c*) behaviour patterns in conditions of uncertainty, and (*d*) changes in monetary policy. A chapter is devoted to each of these problem groups and prepares the ground for a review of the models *sensu stricto*, showing their limitations and the many factors discussed in other trade-cycle theories which they neglect.

Into this framework the author packs the analyses of a great number of partly familiar, partly unfamiliar, theories. Thus in the chapter on adjustment periods and time lags we find, apart from a discussion of the acceleration principle, a study of Zwiedineck's law of temporal income sequences, of Schmalenbach's theory of fixed cost and the short-period supply curve, and of the heterodox reaction of agricultural producers to price changes. On the other hand, the discussion on time lags that should have been here is shifted partly into the interesting savings–investment analysis and partly into the model discussion. The acceleration principle is closely scrutinised and rejected as a major dynamic agent because it can hardly be effective for fixed capital in the downswing and early revival, and Professor Jöhr argues that it can hardly come into play at the top of the boom. Only if full employment in the consumer's goods industries is accompanied by under-employment in the investment industries will the accelerator really work. This argument is skilfully extended to a critique of the qualified use that Hicks makes of the accelerator.

The chapter on the effect of monopolistic conditions in the commodity and factor markets on investment and employment

and of general and partial price rigidity on the stability of the system follows mainly traditional lines. But Professor Jöhr has much to contribute in the next two chapters on the role of psychological and monetary factors in the cycle. A thorough examination of the theory of expectations leads him to reject the probability approach of reducing uncertainties to certainty equivalents, and he is not well satisfied with Shackle's alternative principle of potential surprise or Niehans' principle of smallest regret. As in his view uncertainty cannot be dissolved by any such calculus, he asserts that entrepreneurs groping in the dark will be inclined to look for signposts to guide them, and are likely to find them in their own business experience. But they will be partly influenced by prevailing moods (*Stimmungen*) which have been unduly neglected in current theory. The effects of anticipations and of valuation and costing methods, that will tend to distort profits and hence investment and output decisions, are treated as special cases of psychological behaviour. The analysis of monetary theory is an interesting and sometimes provocative attempt to bring together, and if possible to reconcile, different trends of theorising which have developed separately in various Continental and Anglo-Saxon countries. All this provides the basis for a presentation of the models of Böhi, Lundberg, Metzler, Kalecki, Hansen, Samuelson and Hicks. With the exception of Hicks, they are treated rather summarily and put aside rather lightly.

It is impossible to do justice in a short review to a work of this kind, whose value lies not so much in any particular result but in the broad synopsis and the painstaking scrutiny of the theorising about trade-cycle problems that has been growing mushroom-like in the last generation.

As a one-man stocktaking survey of contemporary business-cycle problems it stands out as a singular achievement, and must rank among the standard works in the subject, similar perhaps to Böhm-Bawerk in his thought-provoking critique, whatever one may think about the " positive theory."

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A History of Economic Thought. By J. F. Bell. (New York: The Ronald Press, 1953. Pp. v + 696. $6.50.)

It is now forty-five years since *l'Histoire des Doctrines Économiques depuis les Physiocrates jusqu' à Nos Jours,* by Gide and Rist, and forty-two years since Haney's *History of Economic*

Thought—" a critical account of the origin and development of the economic theories of the leading thinkers in the leading nations " were published. Economic thought since then has witnessed in all directions a revolutionary change, and advance has been quite phenomenal, notably since the publication of Keynes's *General Theory* eighteen years ago. In consequence, the need of an up-to-date treatise of the history of economic thought has been evident. Professor Bell's book, therefore, is timely. I know of no other text-book of its size which gives so satisfactory and so competent an acquaintance of the whole field. The exposition is forcible. The author shows an unusual facility in doctrinal synthesis, and omits nothing that is essential.

The book is divided into seven parts: Part I—the beginnings of economics; Part II—the beginnings of modern theoretical and applied economics, mercantilism and the physiocrats; Part III—the development of classical economics—Adam Smith, Malthus, Ricardo and their disciples; Part IV—critics and criticisms of classical economics; Part V—the development of marginal utility economics; Part VI—the development of economics in the United States; and Part VII—the main currents of economic thought in the twentieth century—Marshall, Keynes and some post Marshallian developments—English, Swedish and American. The chapters on Adam Smith, Walras and Pareto are of special interest. When one reads the two chapters devoted to Adam Smith one misses no salient point. We are reminded that the England of Adam Smith's time was devoted to agriculture and foreign trade, but as yet had not too much to manufacture. We feel that Adam Smith was prejudiced against manufactures because of his admiration for the physiocrats just as he was prejudiced against money by his dislike of mercantilism. Professor Bell has travelled widely in the United Kingdom and on the Continent of Europe, and his work reflects the results of investigations on the spot. This is evident in the chapters on Adam Smith and on Walras, perhaps the founder of marginal analysis and of what we call to-day the Walrasian technique.

No book covering so wide a field as this can satisfy every reader. Professor Bell would be the last to expect this. One or two constructive criticisms of a general kind may accordingly not be out of place. The influence of specific events on particular generalisations has not been given the stress that is desirable. The Law of Diminishing Returns requires references to Parliamentary inquiries preceding the Corn Law of 1815, since the records contain data and expressions which were formulated by

West in 1815. Contemporary events play an important part in the generalisations of Malthus and Ricardo. Similarly, in our own day the background of Keynesian thought must not be forgotten, especially the early thirties with its high unemployment. It contravened the most fundamental beliefs of Adam Smith, Ricardo and their followers, who believed that, left to itself, the economic system—economic activity in general, savings, employment—will balance at a point of highest well being. Keynes, on the other hand, showed that the condition of the free capitalist market is one of chronic disequilibrium, requiring direction by purposeful minds if the self-balancing perfection of the capitalist order is to be achieved. The Employment Act of Congress 1946 has enshrined this belief, as has the British White Paper on Employment Policy 1946. To those who teach the new economics in universities, Professor Bell's simple chapter on " John Maynard Keynes, the Architect of National Income Policies " is a little unsatisfying, and in a future edition may be given more detailed treatment. There should be, too, greater attention to dynamic process analysis and to business cycles. The writers on these important developments of economic doctrine are well known.

Marshall at the Political Economy Club in London once said, " All short statements are wrong." Every writer of a treatise on the history of economic thought feels the truth of this. Professor Bell says, " even Mill, with his faithful adherence to free trade doctrines and his strong denunciation of protection, would justify protection of new or infant industries " (p. 270). In Book V, Chapter X, of the *Political Economy*, the seventh edition 1871, the last revised by Mill himself, Mill changes " will " in the 1848 edition to " might " in the sentence " A protecting duty, continued for a reasonable time, might sometimes be the least inconvenient mode in which the nation can tax itself in support of such an experiment." But [it is essential that (inserted in the 1871 edition)] " the protection should be confined to cases in which there is good ground of assurance that the industry which it fosters will, after a time, be able to dispense with it; nor should the domestic producers ever be allowed to expect that it will be continued to them beyond the time necessary for a fair trial of what they are capable of accomplishing." These two verbal changes weaken the force of the concession, but in the letters we get further details of a change of mind. Space will not permit my illustrating this from at least half a dozen letters that leap to mind. In a letter of December 7, 1868, instead of a temporary duty he would recommend an annual grant from the public

treasury, a bonus or bounty. Is, again, Professor Bell correct when he says, "even though Marx added little or nothing to the broad development of economic thought he must be regarded as responsible for the highest level of criticism yet reached" (p. 656)? Does he not overlook Marx's high place in economic dynamics, in the theory of economic change? Schumpeter, in the recently published *History of Economic Analysis*, rules out value judgments and ideology as being irrelevant, and praises Marx's dynamical approach as he does that of Walras. In Seymour Harris' words "unlike Keynes, Schumpeter deals generously with Marx and as an economic analyst Marx emerges here as one of the great economists of all time."

In view of the high place given to the Schumpeterian system in American universities a few comments on Professor Bell's analysis of his work must be given. Schumpeter is regarded here in the United States as "one of the three or four leading economists of his generation and one of the great figures of this University," to quote from a Faculty Minute of Harvard dated February 7, 1950. Why in the history of economic thought will Schumpeter never be regarded as the founder of a school like Marshall or Keynes? The answer, I believe, is in Schumpeter's words in a farewell address to his students in Bonn: "I never wish to say anything definitive; if I have a function it is to open doors and not to close them." Schumpeter's first major work is stated to be the *Theorie der Wirtschaftlichen Entwicklung* (Theory of Economic Development), but the first major work is *Das Wesen und Hauptinhalt der Theoretischen Nationalokönomie* (The Nature and Principal Content of Theoretical Economics).

Professor Bell's wide acquaintance with the development of economic thought has resulted in a skilful weaving together of the various economic doctrines into a whole. Some selection, as in the case of other histories of economic doctrine, had to be made, and by abstaining from detailed criticism he has given us what the authors say. We have, in short, a readable and important history of the origin and evolution of the actual doctrines which are recognised and taught in American, British and other universities to-day. He had done, in the expressive American phrase, "a good job."

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Kritika sovremennoi burzhuaznoi politicheskoi ekonomii Anglii (Critique of Contemporary English Bourgeois Economics). By I. G. BLYUMIN. (Moscow: Academy of Sciences. Pp. 357. 15.10 roubles.)

A SOVIET book on British economics, under the highest academic auspices, is something of an event. In recent years there has been no serious examination of Western economic doctrines, as distinct from journalistic polemics against "Keynesianism." In the less strained atmosphere of post-Stalin Russia, there are grounds for hope that sterile polemics might be replaced by an effort to understand, and so Mr. Blyumin's book, which was sent to the printers in October 1953, may be viewed as an index to the state of mind of Soviet academic circles. It is also of interest to observe the impact of the familiar works of leading British economists on the mind of a Soviet expert.

There seems no doubt that Mr. Blyumin knows his subject, and that he has read the relevant books and periodicals. Unlike so many of his colleagues, he does not simply denounce, but does try to acquaint his readers, however briefly, with the theories of "bourgeois" economists. One finds tolerably clear expositions of the marginal-utility theory, the multiplier, liquidity preference and many other western concepts, and there is a serious historical analysis of this country's balance-of-payments problems. Some of the criticisms are well argued from a Marxist standpoint, notably the vigorous assault on the marginal-utility theory. (It "stands everything upside down, by claiming that the value of commodity is determined by relative scarcity. In reality the relative scarcity of products is determined by their value. The latter, through market prices, influences the magnitude of effective demand, to which the volume of supply adjusts itself," and so on.) In a stimulating historical review he makes an effective attack on Senior, though it is surprising to learn that his works have acquired a new popularity in England in recent years, and he reproaches Marshall, not unjustly, with assuming that the economic system he knew was natural for all time. If only Mr. Blyumin were not so anxious to denounce all "bourgeois" theories as totally false, his book would be of not inconsiderable value.

Mr. Blyumin makes things difficult for himself from the very beginning. "Bourgeois economics has long ago lost all connection with real science"; its purpose is "at all costs to justify capitalist monopolies and their robber methods of maximising profit" (pp. 3–4). Nor does he fail to cite, though without either

quotation marks or acknowledgment, Stalin's somewhat extreme views of the nature of contemporary capitalism; thus on p. 4 we find its essence defined as " ensuring maximum profits by means of exploitation, ruin and pauperisation of the majority of the given country's population, by enslavement and systematic robbery of the peoples of other countries, and finally by war and the militarisation of the economy, in order to ensure maximum profits. This basic economic law underlies all the main aspects and all the main processes of development of contemporary capitalism; it is the key to understanding its laws." Mr. Blyumin also takes most literally Marx's theory about the relative and absolute pauperisation of the working-class, and so we find him arguing that British working-class standards inevitably fall in times of inflation (p. 192) and deflation (p. 233), that increases in labour productivity lead to a fall in real wages (p. 59), and so on. To him it is axiomatic that the majority of the population live below subsistence level and that their standards are constantly declining. It is sad that a serious economist should express these and other crudities in a specialist and expensive work destined for a restricted audience.

He feels himself compelled to attack everything, even these theories which, from his own standpoint, might seem quite reasonable. For example, the traditional analysis of monopoly price expresses not inadequately the desires of the monopolist to make a profit, but this is not enough for our author. He indignantly denies that elasticity of demand has any relevance to price fixing under monopoly conditions; to him this approach is a trick, by which " the advocates of monopoly capitalism (Marshall, Keynes, Hicks, Robinson and others) " pretend that the monopolists are not interested in " increasing prices to the maximum." Mr. Blyumin is doubtless seeking to be true to Stalin's doctrine about " maximum profits," but achieves a nonsensical result in the process, since in his hands the concept " maximum " becomes a meaningless synonym for infinity. No one can get very far in serious analysis on the assumption that all and every theory is pernicious rubbish.

Perhaps the most irritating feature of the book is the constant imputation of dishonest motives, which is as pointless as it is unnecessary. Mr. Blyumin grants subjective honesty only to Adam Smith and Ricardo, but to no " bourgeois " since their time. Attacks on Keynes's motives, allegations of fascist sympathies and desire for war, abound throughout the book, which devotes many pages to him. Living economists all come in for rough treatment. Pigou is presented as a " cannibal "

for apparently wishing the unemployed to die of hunger (pp. 186–7); Joan Robinson "cynically stands for unemployment while pretending to support full employment" (p. 205), and her criticisms of orthodox economics (as those of Keynes himself), are "a clever manœuvre, calculated to disguise (her) own apologetics" (p. 92); more than once Robbins is said "consciously to falsify" (*e.g.*, p. 134), but receives mild treatment compared with Lord Beveridge and Hayek; Austin Robinson "develops with exceptional cynicism a completely false theory," according to which the burdens of rearmament must be borne by the working-class (p. 346); Harrod's proposals for reducing investments had the purpose of "increasing unemployment, which, he declared with enthusiasm, would reduce wages and ensure the transfer of labour . . ." (p. 215). (Harrod may be surprised to learn that the proposals published in *Are these Hardships Really Necessary?* were acted upon by the Labour Government within three months!) All this provocative rudeness cannot contribute to understanding, in any sense of the term. It is all the more deplorable when the author is so obviously capable of serious work on Western economics, a fact which emerges despite the polemical style and the frequent crudities of argument and presentation. Perhaps it is not wholly the author's fault, and it is still impossible to have published in the U.S.S.R. a non-vituperative, scholarly work about the west. If this be the case, it is surely time for someone to think again.

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Zagadnienia Ekonomii Politycznej. By O. LANGE. (Warsaw: Państwowe Wydawnictwo Naukowe, 1953. Pp. 160. 9.10 złoty.)

WHEN Oskar Lange left the University of Chicago in 1945 to become, via the leadership of the Polish Permanent Delegation to the United Nations, President of the Co-operative Movement, Chairman of the Sejm Budget Commission and Parliamentary Leader of the Polish Workers' Party, it was to be feared that academic economics would be the loser to practical politics. Even though he soon accepted the Rectorship of the Higher School for Planning and Statistics in Warsaw (the post-war successor to the famous S.G.H. Higher Commercial School), he confined himself, in the sphere of scholarly economics, to teaching.

His latest work is to be regarded more as a combination of these

two activities, pedagogy and politics, than as the new contribution to economic theory which its title, *Problems of Political Economy*, might imply. The subtitle *In the Light of J. Stalin's "Economic Problems of Socialism in the U.S.S.R."* offers a better indication of the book as an *exposé* and amplification of Stalin's last work intended for students and party workers. The book reprints three articles, published almost simultaneously: "The Economic Laws of Socialism," "The Bases of the Economic Law of Contemporary Capitalism" and "The Disintegration of the Unified World Market and the Creation of Two Parallel Markets in the World Economy."

The first two articles cover in many respects much the same ground, following Stalin in countering the traditional Marxist rejection of any but historico-relative validity for economic laws, with the recognition of the "reflection of objective processes"; and contrasting the imputed laws of increasing welfare through harmonious economic development under socialism with pauperisation under the capitalist maximisation of profits. A certain selection of statistics is quoted, principally from publications of the United Nations Economic Commission for Europe, and while the appeal for proof is essentially to Stalin's work, some echos and some implicit rejections of Professor Lange's pre-war writing in America may be found. His proposition that a "wrong economic policy" tends to have a natural reaction indicative of the error may be a generalisation of his trial-and-error procedure in the determination of accounting prices (*On the Economic Theory of Socialism*, p. 89); his suggestion in the first article that under capitalism "the ruling class often opposes the recognition and application of physical laws" (p. 17) links with his pre-war statement that "the maintenance of the value of invested capital is not compatible with cost-reducing innovations" (*op. cit.*, p. 113). Yet when he expands this in the second article to the outright claim that contemporary "monopoly capitalism" is uniformly opposed to technical progress (p. 88) he leaves aside the much more nuanced analysis in Chapter XII of his *Price Flexibility and Employment*, where he showed that under monopolistic competition, innovations, other than factor-saving, are output-increasing, although under oligopoly only innovations that considerably reduce marginal cost can be output-increasing.

The third article describes the expansion of world trade—more rapid than that of world production—before the First World War, the stagnation caused by the Depression and the Western European dollar problem after the Second World War. The

causes of the latter he finds mainly in rigid United States protectionism, the shrinkage of Western Europe's invisible balances and, as befits a leading organiser of the 1952 Moscow Economic Conference, the decline in East–West trade. Some of the supporting statistical comparisons could have been improved by greater precision—for example, the Polish industrial production index (p. 139) compares post-war with pre-war territory (viz., excluding Silesia), and all the Eastern European indices calculated on a gross value basis are compared, without qualification, with Western European value added indices.

Limited in scope as they are, these articles cannot be considered as assuming a major place in Professor Lange's work, and students of socialist economics await with interest the larger and more general study upon which he is believed to be now engaged.

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Income Redistribution and Social Policy, a set of studies. Edited by A. T. PEACOCK. (London: Jonathan Cape, 1954. Pp. 296. 25*s*.)

THIS series of studies is mainly concerned with analysing the extent of income redistribution through Government action in Denmark, France, the United Kingdom, the United States and in underdeveloped areas. There are also two papers dealing with theoretical questions connected with income redistribution. Like all such "collections," this set has both its advantages and its defects. By bringing together studies of conditions in various countries, made by specialists who have full access to official statistics, it fulfills a task which would have been beyond the ability of any individual author. On the other hand, difficulties arise in ensuring that the various studies do not overlap unnecessarily.

Whilst one appreciates the difficulties in editing a book of this kind, one can hardly be enthusiastic about the way the editorial task has been performed. There is not, as one would have wished, an introductory paper stating the general nature, implications and effects of income redistribution which all the authors could have "taken as read" in their individual studies. Instead, each author has been left to make such general points as he wishes. This has led to some repetition and, in any case, makes for rather tiresome reading. For example, it is a little trying, for a reader who has progressed as far as p. 268, to be

informed that "Progressive taxation has the effect of redistributing income vertically"—and more in the same vein. Similarly, Mr. Conrad's paper on the United States begins with a lengthy general discussion of the meaning and effects of income redistribution.

In Mr. Lim's paper on underdeveloped areas the first half is devoted to a discussion of conditions in the United Kingdom and the United States, despite the fact that nearly half the book is devoted to these countries. This part of Mr. Lim's paper might surely have been omitted; the fact that, in the introduction, the editor almost apologises for its inclusion, serves only to make matters worse; one can appreciate his problems, but editorial difficulties exist only to be overcome.

The two theoretical papers are by Mr. H. G. Johnson and Mr. D. Berry. The former discusses how interdependent consumer preferences can influence the effects of income redistribution on the general level of income. This paper enlarges on Mr. Johnson's earlier work in this field, and seems to represent the ideal both in length and content. Mr. Berry's paper considers the complex problem of how far welfare economics can help in choosing between various possible methods of income redistribution. Much of the argument is in terms of the recent "direct versus indirect tax" controversy, and is interesting so far as it goes.

The contributions relating to individual countries should prove most valuable. The Danish study, by Messrs. Lemberg, Ussing and Zeuthen, gives a useful summary of the political background to income redistribution in Denmark, as well as of the main features of that redistribution itself. The French paper, by Messrs. Rottier and Albert, shows, in particular, how current social problems in France have both caused and been caused by the important role played by childrens' allowances of one kind and another. Indeed, the paper might well have concentrated wholly on this topic, in the same kind of way as Messrs. Browning and Peacock have concentrated on particular aspects of British income redistribution policy—particularly the difficulties which the National Insurance Scheme, as at present constituted, faces in a community where the proportion of elderly people is growing. These latter authors are to be commended for coming rapidly to the point and remaining there. In contrast, Mr. A. H. Conrad's paper is far too long and begins most unpromisingly with a show of unnecessary formulæ and singularly unpleasing jargon. However, this paper improves as it progresses, and the comparisons of

pre- and post-war income distribution in the United States are illuminating.

Mr. T. B. Lim's discussion of the position in underdeveloped areas is short, mainly because there is so little to be said. It is good, however, for Western Europeans to be reminded of this aspect of the problem of backward areas—including those in the British Commonwealth. Mr. Lim rightly raises the crucial question faced by such countries, namely, " Does the prior claim of economic development mean that schemes of social service expansion will have to be deferred? " On the other hand, he summarily rejects the export tax as a useful means of raising revenue in backward countries. Admittedly such a tax has its drawbacks, but since some economists favour its use, one could wish that these failings had been considered more fully.

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Welfare and Taxation. By COLIN CLARK. (Oxford: Catholic Social Guild, 1954. Pp. 80. 3*s.* 6*d.*)

IN a small pamphlet containing only sixty-two pages of text Mr. Colin Clark puts forward suggestions for the fundamental reorganisation of the social services and the taxation system of this country, on the following lines:

Unemployment insurance is to be handed over to the trade unions to administer, although employers' contributions would still continue to be paid. The National Health Service would be replaced (in time) by insurance through voluntary societies against the more serious illnesses or accidents; ordinary illnesses and medicines being paid for direct by the family. The whole of school education should be handed over to the Churches and Religious Orders, which would be subsidised to a sufficient extent by the State. Housing subsidies and rent control should be abolished, and all council houses sold at a fair present-day market value—with a resultant decline in municipal or national debt which might save £200 million in interest. Old-age pensions should be administered through friendly societies or trade unions, the State adding £11,000 million to the National Debt to finance the pensions of those living and now entitled to pensions whose past contributions are actuarially insufficient to meet the claims.

On the revenue side road users should bear the whole cost of the roads. Coal-mines should remain the property of the State,

but each pit (or group of pits worked as a unit) should be leased to the miners who work it, the rents being scaled so as to bring in about £250 million to the Exchequer. On this proposal Mr. Clark comments : " If it is necessary to collect public revenue on any commodity the best one to choose is coal, for reasons which will be clear to anyone who has carried his study of economic theory beyond the elementary stage." All taxes on commodities would be abolished, with the exception of those on motor vehicles, petrol and coal. Income tax on lower incomes would amount to an average of 5% for wage-earners and 9% for salary earners, but would be assessed on family income per person, so that larger families would be completely exempt. In the case of the higher income groups and property owners the tax-payer would be entitled to deduct from his taxable income the amount devoted to the purchase of assets, but would be required to add to it any sums obtained from the sale of assets and any net increase in liability. Thus all savings would be exempt, while capital gains would be taxed if they were spent, but not if they were invested. Taxes to yield about £150 million a year would be levied on the ownership of land, both rural and urban. Death duties, which are " inequitable and economically harmful," would be abolished and replaced by an annual tax on capital. Local rates should disappear and be replaced partly by revenue from land-value taxation and partly by local-government income taxation. Finally, we are promised a stable price level if we will adopt the Graham commodity-based currency system.

Mr. Colin Clark is primarily a statistician, and the professional economist will find a good deal of interest to him in the statistical analysis of the allocation of taxation between different income groups, which is contained in a fairly lengthy appendix. Out of 51 million people in the United Kingdom, he calculates that there are 36 million in the manual-worker class with incomes up to £600 p.a. These 36 million have an annual income per person (man, woman and child) of £196 p.a., of which one-quarter, or £49 per head is paid out in taxation. Further, on assumptions that seem reasonable, he estimates that these same families, who contribute in total £1,780 million annually in taxation, receive back £1,600 million in the form of social services, including food and housing subsidies but not war pensions. Their net contribution as an income group to the general expenses of running the State, including re-armament, is thus of the order of £180 million p.a.

Mr. Colin Clark's pamphlet has given rise to many unfavour-

able reviews in the popular Press, some merely sarcastic and others abusive. But surely every man is entitled (if he has the courage) to produce his own version of Utopia, without necessarily being open to the charge that he has wilfully ignored all political and other realities—with the corollary that everything he has said can be dismissed out of hand as the product of a disordered imagination. It must, however, be admitted that the manner in which Mr. Clark presents his case is not calculated to disarm those who are antipathetic to his views. In conclusion, it may be observed that in so far as Mr. Colin Clark does regard his proposals as having a possible practical bearing, a number of them might be expected to find a more favourable response in Eire, where the Hierarchy is a potent political force, than in Great Britain or Northern Ireland.

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The Price of Fuel. By I. M. D. LITTLE. (London: Oxford University Press, 1953. Pp. ix + 197. 12*s.* 6*d.*)

THE symptoms of maladjustment in the British fuel and power industries are perhaps not as obvious as they were a few years ago, but the underlying situation continues to cause serious concern. Their price policies in particular have been the target of considerable criticism, much of which has remained unanswered. The Ridley Report (Cmd. 8647), published in the autumn of 1952, contained some authoritative recommendations which could go far to put fuel policy on a more rational basis, but they have mostly been ignored by the responsible boards in the nationalised industries. Rightly believing that the matter should not be allowed to rest, Mr. Little has now given a restatement of the case for using prices as incentives.

His proposals, for which he claims no originality, agree largely with those of the Ridley Committee, especially with those of the group of four members which included Professor Arthur Lewis. The principal suggestions are an increase in the domestic price of coal by what amounts to an excise tax of £1 per ton, subsidisation of more efficient coal-burning appliances, introduction of time-of-day charging for large electricity consumers and a reinforcement of the competitive position of gas. These proposals are so well known and evidently sound, that they need no more than an endorsement here.

Mr. Little's argument calls for more discussion. It is based to a large extent on the desirability of making more coal available for exports by reducing wasteful usage at home. For this purpose Mr. Little tries to show that foreign consumption of British coal could be expanded very considerably, so that even the National Coal Board's estimate of 25–35 million tons in the early 1960s would be unduly conservative. Such forecasts inevitably involve a number of hazardous assumptions, and I for one have the impression that the author's prognosis is on the optimistic side. It does not seem to make sufficient allowance for increased oil production in the Middle East, especially if—as will presumably happen some day—Iranian oil starts to flow again. It is also conceivable and in line with some currents in United States trade policies that American surplus coal, carried in American surplus tonnage, will be dumped on the European market if it can no longer be sold at cost. Mr. Little seems to assume, on the contrary, that British coal when available will automatically replace American coal. Furthermore, the coal–steel pool might have some success in making European coal production more efficient, or it might undertake other measures which would further diminish the chances of large British coal exports.

These possibilities do not weaken Mr. Little's conclusions; even if there were no foreign demand at all, it would be desirable to produce and use coal more economically. They do, however, weaken his argument, for although he ridicules a " coal theory of value " he comes remarkably close to expounding one himself.

In any case the outlook for the future is so uncertain that the policy adopted should possess ample flexibility. Mr. Little's proposals do not meet this requirement; since he does not consider the price mechanism a good rationing device for sudden and temporary changes in supply or demand, he wants the price of coal (including the tax) to stay substantially constant over time. It is hard to see why, since Mr. Little wants to increase the present price of coal in order to reflect its current scarcity, he opposes changing the price when the scarcity changes. If long-term supply and demand could really be predicted with confidence a fixed price would have some merit, but this condition is unfortunately not satisfied.

It will be seen that Mr. Little's faith in prices as instruments of economic policy is rather limited. His attitude towards the marginal-cost principle is also ambivalent. At the beginning of his book he advances some interesting reasons why the application of this principle is less debatable in the fuel and power sector than

it is elsewhere; nevertheless, the author of *A Critique of Welfare Economics* still seems to have his tongue in his cheek. This is no doubt why he prefers to rely so largely on *ad hoc* arguments of the kind discussed above. Inasmuch as general principles should always be capable of exemplification in specific situations this approach might be perfectly justified, but in fact Mr. Little restricts himself too much.

This is a disappointing book, all the more so because in a brief final chapter the author shows himself well aware of the basic problem of a national fuel policy for Britain and yet says hardly anything about it. This problem is the direction of the nationalised industries by the Government in a way which compels those in charge to follow the public interest (rather than their sectional ambitions) without, however, interfering in the day-to-day product of business. The unimpressive results of nationalisation so far are no doubt largely due to the absence of a well-considered policy in this respect. If Mr. Little had gone into these matters instead of adducing vulnerable reasons for sound but hackneyed proposals, his talents would have been more rewardingly applied.

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The Economic Impact on Underdeveloped Societies. Essays on International Investment and Social Change. By S. Herbert Frankel. (Oxford: Basil Blackwell, 1953. Pp. vii + 179. 15*s*.)

In this collection of nine essays on economic development, broadly interpreted to include social, cultural, and technical change, Professor Frankel deals with wide, diverse and complex issues. His general thesis is the importance of spontaneous organic growth as a prime mover and condition of economic development. The following are the principal strands of thought in this general theme. The growth of income and wealth depends largely on the establishment of fruitful inter-relationships between individuals and groups. Mutual interdependence and co-operation enlarge the boundaries of economic activity in space (through specialisation and exchange) and in time (through contracts extending through time), thereby emancipating men to some extent from the bonds of space and time. The successful establishment of such relationships requires qualities and attitudes which are of slow growth, notably trust and integ-

rity in commercial relationships; readiness to honour contracts; appreciation and recognition of one's dependence on the efforts of others. These qualities, together with the ability to undergo gradual but continuous adaptation to changing conditions and opportunities, are the principal conditions of economic development, a process which cannot be greatly influenced directly by governmental decisions; and there cannot be any clear-cut, much less any final, solutions to the problems of economic development. Further, significant aspects of this process are not susceptible to quantitative measurement or expression.

Professor Frankel is exceptionally qualified to consider these issues. He has a reflective and philosophical turn of mind. He has read both widely and deeply, and his knowledge ranges over several relevant cognate subjects. He has lived in a rapidly growing economy which over the last few decades has exhibited some of the most characteristic phenomena of rapid economic development together with the tensions of a multi-racial society. His treatment of these issues is on a much deeper level than most contemporary discussion on this subject. Some fundamental conditions and aspects of economic development are discussed with depth and understanding. There are also thoughtful and suggestive discussions and reflections on various important topics: the process of debt-creation; the interaction of social and technical change; the use of national-income figures as indices of economic welfare; the particular features and dangers in Africa of social uprooting and rapid urbanisation. All who wish to consider development problems seriously will want to read these essays.

These qualities need to be emphasised, since they may fail to be recognised partly for reasons external to the book, and partly because of some of its defects. The contemporary intellectual climate and institutional arrangements are unfavourable to Professor Frankel's ideas. He has no specific proposals for policy, least of all for the establishment of new organisations and agencies to promote development; and he does not regard such organisations as a principal instrument of economic progress. Nor does he consider only such constructions, institutions, and arrangements as examples of development which can be attributed to the activities of identifiable individuals and governments. All this runs counter not only to the current trend of opinion, but also offends powerful intellectual, administrative and political vested interests.

But there are defects in the book which may obscure its

merits. The style is involved. To some extent this reflects the difficult concepts which Professor Frankel handles, and perhaps also his desire to establish his argument in a hostile environment by different formulations of particular propositions. But this does not explain completely the accumulation of subordinate clauses, or the lengthy enumerations of closely related characteristics of phenomena, which at times make for tedium, and which obscure or retard the argument.

The seriousness and depth at which Professor Frankel considers economic development and social change throws into relief certain weaknesses of the book. Questions irrelevant to the familiar superficial treatment step into the foreground and insist on being asked at his level of discussion; and yet at important stages in the argument he does not ask what would seem to be important and relevant questions.

Professor Frankel stresses the essential complementarity of the income-creating activities of individuals and groups. He regards as both reprehensible and also as comparatively unimportant (especially on a long view) attempts of individuals and groups to snatch advantages at the expense of others. Yet economic history, as well as the contemporary scene, offer ample evidence of economic struggle and hostility between individuals and groups. This may be because the participants overlook the complementary relationship between themselves and others and exaggerate the competitive relationship; or because they are more interested in their relative position and consider (possibly subconsciously) a relative improvement in their position as more important than changes in the absolute level of their incomes (thus being ordinalists rather than cardinalists); or they may be more interested in the acquisition of power, or in strengthening the internal cohesion of the group than in the growth of wealth. If any one of these views and attitudes are widely held among the more active and influential members of a group, the presence of economic conflict and of attempts to gain advantage at the expense of others become both important and intelligible. All this is particularly significant when there are several groups sufficiently powerful to disintegrate the society. Professor Frankel's exclusive emphasis on the complementarity of the economic relations of individuals and groups leaves us with an unresolved paradox in the presence, prevalence and pervasiveness of economic conflict.

Professor Frankel doubts the influence on economic development of governmental measures, or indeed of political events;

and on this too he says much that is both thoughtful and thought provoking. But in the process he conveys the impression that economic growth is largely unaffected by political events. Now quite clearly they can have adverse, or even catastrophic, results. Well-known examples include the Athenians' Sicilian Expedition; the failure of the Roman Empire to overcome some of its constitutional and administrative problems; the expulsion of the Moors and the Huguenots; the Thirty Years War; and so on down to our own day. Conversely, the campaigns of Alexander the Great, or some of the officially sponsored voyages of discovery of the fifteenth and sixteenth centuries, very probably promoted economic growth. Indeed, the political system, political events or particular governmental decisions (including those affecting the institutional background of economic development), may well be among the factors influencing peoples' attitudes and aptitudes, including their ability and willingness to enter into economic relationships conducive to growth.

To-day there may be scope in various directions for governmental action in promoting economic growth, even without drastic or violently controversial methods. Thus valuable contributions may be made by fiscal and financial measures cushioning the impact of rapid and discontinuous changes on populations at a comparatively early stage in their economic development, and thereby fostering a sense of continuity which may be an important factor in development. Again, certain institutional changes beneficial to economic growth (even beyond the establishment of law and order), particularly in the sphere of tribal customs or in land usage, may perhaps be effected only by Government action. Yet again, certain types of capital investment may have to devolve on the Government when the benefits are indiscriminate and possibly long delayed. In this connection there is an important special case of the desirability of Government investment which may arise in activities in which heavy initial costs have to be met before productive operations can be started, but in which small-scale units are the most efficient form of organisation for the actual production. There is nothing in Professor Frankel's analysis to contradict such suggestions; and he may intend only to stress (rightly) the worthlessness of vague general notions and the need for careful specific inquiry before embarking on such measures. But the emphasis is such that one is left with the impression that political events or governmental measures have rarely, if ever, exercised much influence on development, and cannot make any significant contribution to it.

Professor Frankel refers (p. 9) to the decay of Greece, Rome, Spain and Portugal with the decline of their "structural inventiveness." But he does not discuss the possible political, economic, biological or intellectual reasons. The inventions and discoveries of the Greeks brought them apparently to the threshold of large-scale technical developments by about the third century B.C.; and the stagnation which set in is perhaps mysterious. On a much larger scale the same applies to China: the failure, unwillingness or inability of this gifted and industrious race to break through centuries of stagnation and abject poverty in spite of a civilisation extending back over 4,000 years which has produced art of great beauty and subtlety. Even a whispered answer to these vast questions cannot be attempted here, even if (*pace* Professor Toynbee) there is one. But references to a failure of structural inventiveness not only do not provide the answer, but may also make us forget that we have not got one.

Somewhat similar impressions may be left on the reader by Professor Frankel's discussion (Essay III) on the comparability of national income figures of different communities. The reasoning is acute and important; and it drives home the lesson that very important features of economic life and aspects of economic development cannot be readily expressed in quantitative terms. But in the process the impression is conveyed that national-incomes aggregates can serve little or no purpose. Yet this clearly cannot be Professor Frankel's view, as he has done pioneer work on national income calculations for South Africa.

Professor Frankel's choice of examples is not always fortunate, even where the argument is both important and readily acceptable, and this is likely to prejudice the reader against it. He suggests rightly that a society is doomed which has lost the ability of adaptation. He thinks France on the eve of the Revolution an example of such a "frozen society"; and quotes at length from *A Tale of Two Cities*, which shows a stagnant society divided into a powerful, oppressive and wealthy aristocracy and a poverty-stricken, sullen proletariat. It was in fact the rapid growth in wealth and power of the middle class which so largely exposed the weakness and the lack of function and power of the aristocracy and the Court circle, and thereby precipitated the essentially bourgeois French Revolution. Dickens is hardly a reliable social historian of eighteenth-century France. Again, in his criticism of the groundnut scheme Professor Frankel weakens his argument when he adduces the scarcity of labour to illustrate the mistakes of excessive mechanisation. The scheme was indeed

largely misconceived; but other things being equal, scarcity of labour is an argument in favour of mechanisation.

The final essay in the volume, on civilisation in Africa, contains some of the best and most suggestive reflections in the book; and also some of the least fortunate illustrations, as well as examples of Professor Frankel's reluctance to face the implications of economic conflict. After an instructive and penetrating discussion of some aspects of growth and civilisation in Africa, Professor Frankel hints briefly at racial tension, and (in a lecture delivered in Johannesburg) quotes an American sociologist that the best way to ease it is "to get people to work together at a common task; the task takes over and new illumination lightens up the scene." But is not the crux of the matter the denial by some people that the task is common?

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The Economic Organisation of Agriculture. By T. W. SCHULTZ. (New York: McGraw-Hill, 1953. Pp. xx + 374. 44*s*.)

PROFESSOR SCHULTZ has chosen a somewhat misleading title for his book, which, in spite of the name, contains little information on the current structure of farming either in the United States or elsewhere. In the first part he discusses the problems which may arise in agriculture when it is called upon to adjust either to its own technical developments or to changes occurring elsewhere in the economy. Here he makes a number of valuable and illuminating comments without developing them into a coherent analysis. He points out that in many countries changes in population are still a dependent variable upon agriculture, though the interactions of food supply and population described by Malthus were largely ignored in much of the later economic theory. Oddly enough, he then writes (p. 160), "the conditions on which this classical conception of dynamics rests are no longer generally applicable, but as a special case they continue to apply to much, perhaps even to most, of the world." In this state there is a food problem, and development requires technical improvements in farming or (though Professor Schultz does not mention this) an expanding foreign trade by which food can be procured. In the opposite conditions, such as those ruling in the United States, food supply has outrun population, whose growth is limited by other factors; here there is a farm problem in the shape of rural com-

munities whose standards of life are markedly below the normal for the society as a whole. Professor Schultz shrewdly comments that economic development usually increases inequalities of wealth by raising the maximum which is attainable by selected groups with each country. The " marginal farms " do not yield less income than before, but the standard of living obtained by these farm families remains stationary, while other groups forge ahead. Such inequalities are also apt to create cultural differences which impede human migration from one area and from one trade to others and which intensify the original differences.

The chapter on the declining importance of agricultural land in the United States and the United Kingdom substantially reproduces an article published in the ECONOMIC JOURNAL in December 1951. Here Professor Schultz's analysis seems at his weakest. To compare from 1870 onwards the relative importance of agricultural land in the British economy by estimates of the net rents ignores the simple fact that the British food supply was increasingly drawn from the land of other countries; it ignores the part paid by legislation from 1939 onwards in keeping down agricultural rents. Nor is it anywhere explained how the net rent has been calculated for the United States. The second part of this volume summarises the concepts already developed in Professor Schultz's earlier book, *Agriculture in an Unstable Economy.* The third part is a rather diffuse discussion on the technique of inducing appropriate changes in farming to secure less inequality in agricultural incomes and greater stability over time. These last two parts of the trinity seem unnecessary, in view of what Professor Schultz has already published, but the first part is an interesting, if at times superficial, discussion of the problems likely to arise in agriculture in a developing economy.

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The Role of Mergers in the Growth of Large Firms. By J. F. WESTON. (Berkeley, California: University of California Press (London: Cambridge University Press), 1953. Pp. vii + 159. 26*s.*)

LITTLE is known about the role of mergers in the growth of firms and their effect on the concentration of market power. For this reason Mr. Weston's book is of some interest, particularly to the specialist. It is, however, not a very satisfactory book;

although a considerable amount of data has been used, the book does not inspire confidence in the judgment of the author. This is partly the result of the way in which the major problems have been approached and partly the result of theoretical weaknesses. A multitude of points are raised, but neither their importance nor their relationships are fully explored.

The first part of the book contains the original work and starts with a study of the effect of mergers on the absolute size of firms. Mr. Weston finds that in the United States "external" growth, by means of mergers, has been very much less important than "internal" growth. For example, "Approximately one fourth of the growth of the 74 firms studied was directly accounted for by mergers" and "Acquisition accounted for less than 25% of the growth of half the firms." The conclusion is that "The direct effect of mergers on the absolute size of large firms appears to have been small." At first sight this seems clear cut, but as soon as one looks at the matter more closely some of the difficulties and disadvantages of Mr. Weston's approach become apparent. For example, the first years for which data about the 74 firms was available range from 1886 to 1945, and although the value of assets is the basis of the measurement of size, no allowance is made for the fact that prices have almost trebled since 1900. Further, the rate of growth of the individual firms is not related to the rate of growth of the industry until the author discusses concentration later in the book. Finally, the problem of the relationship between the merger and the subsequent internal growth of the merged firms is raised but not fully examined. This is a problem which should not be ignored, for unless the merger and the subsequent internal growth are largely independent, Mr. Weston's measures are of little importance.

The basic difficulty lies in the fact that the industries studied are so very different that discussion of the sample as a whole can tell one very little without detailed knowledge of the development and structure of the firms and industries. Using this sort of knowledge, it might well have been possible to break down the statistics in such a way that the functional relationships could be demonstrated. The author perhaps feels the limitations of his methods when on p. 21 he points out that a certain industry shows a high degree of external expansion "because its merger movement took place in relatively recent years, leaving correspondingly few years for subsequent internal growth by the firm resulting from the merger." One cannot help feeling that a high proportion of the cases studied may be "special" in the same sort of way.

Chapters 3 and 4 deal with the effect of mergers on industrial concentration, and the discussion of the differences between the three major merger movements (1898–1903, that of the 1920s and the recent merger movement of the 1940s) is the best part of the book. Nevertheless, the analysis is still weak. It is implied that when mergers do not change the degree of concentration they are relatively unimportant. This may be quite untrue in an expanding and changing economy. First, mergers might be preventing a reduction in concentration which would have come about in their absence. Second, they may increase concentration in particular branches of an industry. Third, the develcpment of large diversified firms through mergers gives great market power to those firms regardless of the degree of concentration. Mr. Weston states on p. 103 that: "Mergers during the last two decades have not had appreciable effects on industrial concentration." The Federal Trade Commission, however, in the Report on Mergers, (1948) showed that mergers were increasing the size of large rather than small firms, and that in some industries, notably food processing, canning, textiles and parts of the steel industry, mergers were leading to concentrations of market power. The two conclusions are not quite contradictory, but that of the F.T.C. is useful, whereas Mr. Weston's is almost misleading.

The second part of the book contains a discussion of the economic theory of mergers and the implications of this for public policy. During the discussion of the theory little attempt is made to weight the main factors involved or to relate them to specific industrial structures. As these are the major theoretical problems it is not surprising that the conclusion is simply that mergers may be either good or bad. This conclusion, combined with the earlier conclusion that the recent merger movements have not affected industrial concentration substantially, leads to the recommendation that policy be pursued cautiously and that more experience must be gained.

These are disappointingly slight conclusions for a book which contains much information. Perhaps if the data were used in combination with a study of the structure and history of the individual firms and industries to which it applies, more useful results could be obtained. As it is, Mr. Weston's book is primarily of interest to the reader who has a fairly detailed knowledge of the structure of industry in the United States.

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The Volume of Corporate Bond Financing since 1900. By W. B. HICKMAN. National Bureau of Economic Research, Financial Research Program, Studies in Corporate Bond Financing, No. I. (Princeton, New Jersey : Princeton University Press, 1953 (London : Geoffrey Cumberlege, 1954). Pp. xi + 429. 60*s*.)

THIS work is the outcome of a research project initiated by the National Bureau in 1946, with " a twofold purpose : first, to provide basic statistical series on corporate bond financing . . . and, second, to analyse and interpret the behaviour of these series for what light they may throw on the workings of the economy."

The first of these purposes has been achieved to perfection, and all the reviewer need do is to sketch briefly the nature of the new series here made available. Apart from one chapter on cash flows (Chapter 6), all the new series relate to " offerings, extinguishments, and outstandings " of " domestic corporate bonds," measured in all cases in terms of par amounts, that is at maturity value. The bonds thus defined fall into three groups : railroad, public utility and industrial bonds. The author has excluded bonds issued by real estate and financial concerns, and (where possible) bonds held by governmental agencies, by affiliated corporations or by foreigners. Some 28,000 separate issues have been tabulated. Most of the series are annual and run for the years 1900–43, but some are monthly and a few are continued to 1951.

Most of the " flow " series (offerings and extinguishments) are presented on both gross and on several net bases. For, as the author points out (p. 91), a " stock-flow analysis " may proceed on various degrees of " netness," and if the flow statistics can be arranged so as to be mutually consistent, they will always generate the same estimates of the stock. Clearly, for example, the most net of all Mr. Hickman's flows, " offerings-minus-extinguishments," will generate the same estimates of " outstandings " as his gross series of offerings and extinguishments. Similar consistency is claimed when offerings and extinguishments are each made " net of bond refundings " (bonds offered to retire other bonds), though I myself would expect complete consistency here only if the bonds were always exchanged at par. But for some purposes it is useful to abandon consistency and deduct additional items from offerings which cannot legitimately be deducted from extinguishments : " To obtain a rough indication

of the volume of capital formation financed through the bond market, we have netted out of total offerings not only bond refundings but also . . . bonds offered to retire securities other than bonds, [and to finance] security acquisitions " (p. 108).

In Chapter 6 we learn that over the entire period 1900–43 gross cash proceeds from bond offerings were $60·2 billion, and cash payments at extinguishment $40·0, a difference of $20·2 billion. " Over the same period there was a $16·8 billion increment in the par amount of funded debt outstanding." Thus the cash flow exceeded by $3·4 billion the change in the amount of debt outstanding. This discrepancy is attributed to defaults, the conversion of bonded debt into shares (p. 216), to non-cash transactions and to non-par repayments (p. 245).

The second purpose of the book, to interpret and analyse the figures, is less completely achieved, as is instanced by the following examples. First, the effect of changes in the price level receives insufficient attention : there may not be much point in deflating total bonds outstanding by a price index (p. 8), but there would be some point in bringing in price changes to explain changes in the average size of issue (p. 7). Second, it seems misleading to refer to " the stabilizing role of the bond market during business cycles " (p. 19) when all that is meant is that when a boom is financed by a rise in the flow of money from the share market, there is commonly some decline in the flow of money sought for the bond market. Third, the preliminary discussion about the effect of changes in interest rates on bond financing will strike many readers as being rather naïve. Moreover, later passages on credit control and interest rate policy (pp. 92 and 123) are muddled : the monetary authorities are invited to consider confining their attention to influencing the *new-money* component of total bond offerings, not for the obvious reason that it is only this component which contributes new finance for real investment, but because this component is highly correlated with " net changes in outstandings," as though the total volume of bonds outstanding is the thing which the authorities mainly seek to control. Fourth, Mr. Hickman occasionally supports his arguments with dubious correlation coefficients obtained by comparing the growth through time of a specified section of a population with that of the population itself, as when in Chapter 3 he correlates cash extinguishments with total extinguishments (despite a " Technical Statistical Note " on precisely this problem at the end of the preceding chapter). Moreover, he seems unaware of the special difficulties involved in correlating economic time series, which surely must

deter us from taking at face value the correlation coefficients on p. 126. Finally, the use made in Chapter 4 of the National Bureau method for analysing business cycles suggests a rather mechanical application of a method which is not particularly helpful in interpreting the time series which Mr. Hickman is handling.

I hope, however, that my catalogue of alleged defects in interpretation and analysis will not be thought to detract from the solid worth of a volume which must in fairness be judged mainly as a source of new statistical information, in which respect it is first class.

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Labour Productivity of the Cotton Textile Industry in Five Latin-American Countries. (New York: United Nations Department of Economic Affairs, 1951. Pp. x + 293. $3.)

THIS is an outstandingly good report which contains a great deal of original material, both on methods of investigating productivity in the textile industry and on the level of labour productivity in Latin America. The investigation was carried out by the United Nations Economic Commission for Latin America.

The cotton textile industry of five countries, Brazil, Chile, Ecuador, Mexico and Peru, was investigated, comprising a total of 786 mills in which there were 4·6 million spindles and 147,000 looms. These mills constituted approximately 85% of Latin American capacity, Argentina and Columbia being the most important countries not included in the investigation. One interesting feature of the Latin-American cotton textile industry was found to be the integration of spinning and weaving processes, except in the very small units; another feature found was the overwhelming proportion (up to 90%) of old equipment, most of which must have been installed at the beginning of the century. Only in Chile and in Columbia was the equipment largely modern, having been largely installed since 1938. In all these countries production is almost exclusively limited to articles for domestic consumption, and for popular types of fabrics they meet the home demand.

The study was based entirely on labour productivity, because it was believed that this is the best indicator of internal operating conditions in the mills. There were also the practical consideration of easy measurement and the universal character of

the concept of labour productivity. Labour productivity was measured in terms of man-hours required to produce 100 kg. of each selected product.

The inquiry was carried out by the Commission's staff, assisted by technicians in the countries visited and by a firm of American consulting engineers. The methods employed recall the technique applied by the Platt Committee in their *Report of the Cotton Textile Mission to the United States of America, March–April, 1944*, in that synthethized standard productivities were developed as a norm of comparison. A study of each country was made by visiting a number of mills which differed in size, degree of modernity, characteristics of production and geographical location. These mills together were supposed to, and probably did, provide a representative sample. Altogether over 100 mills were visited in the five countries. The sample was the smallest in Brazil, where inquiries were confined to two of the main textile-producing regions. The actual performances as measured in these sample mills were then compared with the hypothetical performances of appropriate standard mills. In order to allow for variation in size, modernity of equipment, count of yarn and type of cloth, performance data for 144 hypothetical standard mills were built up, each of which was assumed to be operating with maximum efficiency. Over half the report is taken up by a description of the methods of measurement showing the way in which these standard performances were built up. One is left to infer that these standards were based on American practice. For this reason, however, the actual results of the inquiry cannot be easily related to the performance of any particular country.

Following up the measurement of productivity levels, the study analyses in great detail, on the basis of a rather smaller sample, the factors leading to differences from standard productivity. Three main factors are distinguished with many subdivisions : the type of equipment, the size of the mill and the manner in which a mill of a certain type and size is operated. Many ingenious methods are used to determine the quantitative importance of these factors, and among others a method is developed for estimating the optimum size of the mill. The result of the analysis is worked out, both in general terms and in respect of each of the five countries. The inquiry found, for example, that in the old mills five times as much labour is used as could be expected under the best conditions; in modern mills about 80% more. It also found that in the old mills " the equipment factor " (which also includes for this purpose the effect of size) and the " administration (*i.e.*,

organisation) factor " are of about equal importance in explaining this inefficiency. In the case of the modern mills the size factor is of minor importance, and most of the inefficiency can be explained by the " administration factor."

The report concludes with a short chapter on practical recommendations which are also quite realistic and which take into account the fact that the backwardness of the Latin American textile industry is intimately linked up with the general low economic level in this part of the world.

L. ROSTAS

University of Cambridge.

Living in Towns: Selected Research Papers in Urban Sociology. By LEO KUPER and OTHERS. Foreword by Professor P. Sargant Florence and Professor C. Madge. (London: Cresset Press, 1953. Pp. xi + 370. 21*s*.)

THE common theme of these papers is the interaction of the physical and the social organisation of the town. Five types of environment are examined: a new housing estate in Coventry; an ancient market town undergoing " dormitorisation "; blocks of flats in a London borough; an admixture of houses built between the wars in a suburb of Worcester; and a Black Country town. With the aim of giving guidance to town planners and architects, the investigations probe various known or suspected weaknesses of town life, and can thus be described as case-studies in urban pathology.

Mr. Kuper's rather detailed " Blueprint for Living Together " explores " neighbouring " in a post-war residential unit of ninety houses. The study is mainly based on an opinion and attitude survey among the housewives, and the report quotes copious vertabim comments. Design and layout are shown to make privacy very difficult to obtain. Using several indices, the author attempts a statistical assessment of sociability, popularity and selectivity in relation to siting characteristics. Differences are attributed partly to siting and layout, partly to such factors as geographical origin (only one-third are Coventry-born) and status, in terms of roughness and respectability. The physical links between houses are an important factor in, but not the sole determinant of, neighbour relations. In wide-ranging conclusions, similar American investigations and various theoretical studies are discussed and general ecological and sociological questions raised.

Mrs. Whiteley's lively survey of "Littletown-in-Overspill" finds much to deplore, from the miserable gas supply to the civic irresponsibility of well-to-do "immigrants" and the apathy and suspicion of working-class "locals."

The short papers of L. E. White and of Janet H. Madge carry weight, as the authors are versed in their respective subjects. Mr. White writes from observation and informal talk with children and their mothers on "The Outdoor Play of Children Living in Flats." He makes practical proposals, and stresses that imagination rather than money or space are needed for turning barren courtyards into real playgrounds. Mrs. Madge has examined "Some Aspects of Social Mixing in Worcester" by a house-to-house inquiry and by a comparison of clubs, and found little evidence of inter-class association.

In "Spare Time in the Black Country," Doris Rich contributes a thoughtful, workmanlike analysis of factual data. Social facilities being very poor in Coseley, and the 32,000 inhabitants living in several "overgrown industrial villages," the town centre draws people neither for entertainment nor for shopping. Leisure activities are largely confined to the neighbourhood; but an appreciable part of the spare time spent outside the home is spent outside the town altogether, particularly by residents of boundary areas and by those working outside Coseley. Yet, "Coseley people have a very strong local patriotism." Dr. Rich also brings out the differences in the catchment areas of various types of club.

As the papers are concerned with social ailments, they cannot be expected to portray the *joie de vivre* which throbs *sous les toits de Paris* and *under Milk Wood*. Nevertheless, the book would have been more spirited, had the problems been tackled more boldly, nearer to the roots. Certain aspirations of housing and town planning are put to the test, with rather unfavourable verdicts; but the general current doctrine of planning is too readily accepted, and the task of guiding the architectural planner is too narrowly conceived. Recommendations, however sensible, are modest. They include better sound insulation, sparing use of very intimate clusters of houses, sufficiency of population to make a local cinema a paying proposition. Other suggestions, such as "a very wide flexibility of approach" are unnecessarily vague. Some topics deserved more thought. Among these are the time required for the growth of neighbourliness and community spirit; the sapping of community life by the distance of cottage estates from the heart of the town and from

places of work; the possibility that, by shouldering responsibility for their own housing (as by housing co-operatives on the Continental model), people might "shift the emphasis from . . . the expert bureaucratic plan to the activities of the residents themselves"; the issue between catering for tenants' present wishes and envisaging a rise in cultural standards. The question how far the planners' aims are reconcilable with the nation's resources, in land and man-power as well as in capital, is outside the scope of the book.

Not only by its positive contributions but also by its omissions the volume stimulates thought on the varied social and economic implications of town planning.

KATE LIEPMANN

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The Crofting Problem. By the late ADAM COLLIER, with a Foreword by A. K. CAIRNCROSS. (London: Cambridge University Press, 1953. Pp. xv + 191. 25*s*.)

WHEN Adam Collier was killed in a climbing accident in 1945 he was making the final revisions to the manuscript which represented the culmination of his research into the problems of the Scottish Highlands, and he was about to take up an appointment in East Africa. The incomplete manuscript, which has been so sympathetically edited by Professor Cairncross, is a striking testimony to Collier's characteristic ability to integrate an unusually wide range of intellectual interests. For the volume which has emerged is a lively analysis of problems of a dependent, underdeveloped economy which would repay study by those whose interests lie in the colonial sphere as well as by students of regional patterns of development in the United Kingdom.

Collier identified the crofting counties with the Highlands and Islands, so that the area covered by his analysis is the north-western half of Scotland bounded on the South by the counties of Argyll and Inverness, and reaching out in the north to the Orkneys and Shetlands. These seven counties account for more than one-sixth of the area of Great Britain, but they contained only 285,667 people at the time of the 1951 Census. They are relatively unfarmed and unindustrialised, and the crofting population itself is unspecialised to an extent that is paralleled only in the more primitive economies of the world.

In discussing the conditions of economic progress for this highly distinctive area of Britain, Collier ranged over a wide field of well-digested information. He began by considering its basic

natural resources, and analysed the contribution of topography and climate in imposing natural limitations on the range of economic activities and on the character of the social and economic organisation open to the Highlanders. He went back to the mid-eighteenth century to trace the social origins of crofting in the break-up of the clan system, and he described the more recent social and economic transformation in the way of life of the crofter as improved communications widened his horizon and increased his dependence on the world economy. The more specifically economic effects of this increased dependence and the role of the State in shaping the main features of the pre-war situation he examined in detail. Collier's own assessment of that situation was characteristically quantitative, and is contained in one chapter on the regional income of the Highlands in pre-war years and another on population trends in the crofting counties.

One reflection of the thorough way in which all this material has been digested is the size of the volume. An extraordinary array of topics are dealt with in a convincing and stimulating manner within the compass of less than 200 pages. Unfortunately the impact of the analysis fails somewhat in the final chapter which is a summary of the main conclusions in the form of a discussion of possible lines of action. It is the one chapter which gives the reader the impression that it is significantly incomplete. This is understandable. On the one hand, its revision was probably left to the last, and hence it was relatively less complete than the rest of the book; on the other hand, it is irretrievably dated. Up to this point Professor Cairncross succeeds in preserving a right and comfortable time perspective by frequent footnotes and by the insertion where appropriate of the basic recent statistics. It is a tribute both to author and editor that these asides and interjections add conviction to the analysis. In the final chapter, however, the reader is left drifting. Professor Cairncross does predict in his preface that, when the story is brought up to date, " in spite of the changes made since 1945 the basic problem will prove to be much the same as it was when Collier wrote," but it is difficult to lay down the book without speculating on what might have been the author's reassessment of his problem at the present day. What, for example, has been the effect, on what Collier called " the great power of resisting and retarding the rate of change possessed by the traditional Highland way of living," of the expenditure in the crofting counties of over £5 million per annum by the North of Scotland Hydro-Electric Board, together with an afforestation programme of double the pre-war rate,

investment of some £4 million in water supplies and sewerage, construction of new houses at the rate of nearly 1,000 a year, grants to local government of about £1 million per annum and all the increased agricultural subsidies and social-security payments now payable?

Collier estimated that the true regional income of the Highlands before the war was between £17·0 million and £17·25 (or, accepting Professor Cairncross correction for omissions, £21 million). If the same level has been maintained relatively to the United Kingdom as a whole, this estimate must be increased by 1952 to something of the order of £50 million, of which, according to the results of the 1949–50 Income Census, more than £25 million were assessed to income tax. At this inflated level the new investments and transfers mentioned above look somewhat less overwhelming than they did in relation to the pre-war levels calculated by Collier. They are still, however, a remarkable addition to the incomes and the basic capital equipment available in the Highlands. It would be interesting to know whether they have had any appreciable effect on the psychological and cultural factors which Collier ranked above the technological limiting factors to progress in the crofting counties. He stressed, for example, " the persistence into new circumstances of an ancient mode of life and thought, adapted to its own environment and with its characteristic form of social organisation," he deplored " the attitude fostered by unemployment legislation which has euphemistically been termed ' a willingness to receive,' " and he remarked of the Highlander that " Neither personal effort nor government intervention seems likely to raise him from his slough of despond." Comparable problems arise for other underdeveloped economies. If it is indeed possible to solve them or at least to reduce their influence by a sufficiently vigorous and appropriate economic policy, the lesson is one of wide potential application.

PHYLLIS DEANE

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Scottish Chartism. By L. C. WRIGHT. (Edinburgh: Oliver & Boyd, 1953. Pp. 242. 21*s.*)

DR. WRIGHT has chosen as his field one of the most encumbered and overgrown to be found anywhere in post-industrial history. All historical movements, in the definable sense, are the results of twisted and numerous threads, but threads may be twisted into

a patterned plait or confused into a gigantic knot. Chartism is undoubtedly a knot, and in consequence requires patient unravelling to the very last involvement. In addition, the author has attempted to add to the considerable literature on Chartism in general a description of its vicissitudes in the hitherto uncultivated field of Scotland. Here Dr. Wright is attempting something which not only Scottish nationalists will applaud but all interested in completeness will hope to see extended to other fields. There can be no question that economic history has suffered to a greater degree than political and social history from a sort of generalised parochialism—as far as industrialism is concerned the provinces have tended to be more important than the metropolitan centre, and Chartism was certainly a phenomenon of industrialism.

The form of the book is conditioned to a large extent by its subject matter, and is thus not amenable to succinct precis. The main contention is that Scotland's experience was different from England's because of the different timing of industrialisation—specifically that the full tide of economic change came at a later date in Scotland, and so altered the attitude of public opinion. For instance, it is argued that 1830–50 " was an era of economic progress for Scotland " and that, by implication, for England it was a period at best of marking time. This seems debatable in general terms, and in addition it could be argued that rapid development involves large-scale dislocation of individual ways of life, a reason for discontent rather than the reverse. Much more helpful are the arguments that the peculiarities of the Scots Poor Laws and the local attitude to it (chiefly acquiescence) and the influence of a flood of ignorant Irish immigrants served to reduce the force of Chartism in Scotland.

Apart from this, the book has brought together an immense collection of variegated evidence of Chartist activity in Scotland. Naturally much of this is difficult to evaluate or to reduce to order, since a great deal of it rests on the authority of more or less ephemeral newspapers and tracts, nearly all of which were naturally biased. However, from the patient editing of Dr. Wright emerges an unmistakable atmosphere of what Dr. J. L. Hammond called " The Bleak Age "; the fundamental problems of Chartism were those of a society being more rapidly transformed than any since early mediæval times; from every side the uprooted and the confused sought comfort, and they were supplied with it by every sort of physician from the objective observer to the hysterical lunatic. The description of this chaotic and often pitiful scene has been achieved for Scotland by this book.

In addition, the author has elaborated a number of factors which were unique to Scotland and served to make the adherence of Scots to Chartism episodic. The period includes the disruption of the churches; the evidence suggests the long history of Glasgow–Edinburgh rivalry and the characteristically ambivalent attitude of Scots to temperance. These and a host of other matters consumed time and money and chopped the movement into a hundred splinters. Under conditions of weak leadership or divergent loyalties Scotsmen exercised their native tendency to philosophical argument to the almost total exclusion of constructive action. It seems that it is here, in character and environment, rather than in any fundamental difference in economic circumstances, that the interest of Scottish Chartism lies.

Dr. Wright divides the period into the English phase up to 1839, the Scottish phase 1839–42 and the Irish phase 1842–48, in an attempt to distinguish differences in leadership and direction. Superficially this is helpful from the analytical point of view, but fundamentally the Lowland Scots character seems to provide a continuous vein of intransigent argumentativeness. In a period which is now recognised to be the convulsive genesis of modern capitalism the Scots indulged in a frenzy of enjoyable but unconstructive "pheelosophising."

However, even if the main thesis of this book is debatable, there remains a considerable addition to our knowledge of a fundamentally important period in economic history. For this, for his attention to detail, for his easy narrative style and for his wealth of anecdote Dr. Wright is to be congratulated.

A. V. COLE

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A Hundred Years of Progress. The record of the Scottish Typographical Association 1853 to 1952. By S. C. GILLESPIE. (Glasgow: Robert Maclehose for the Scottish Typographical Association, 1953. Pp. vii + 268. 25*s.*)

THE printers, among the best-documented of trade unionists, show their customary concern for a sound recording of their affairs in entrusting the writing of their history to properly qualified persons. If Miss Gillespie has not served the Scottish Typographical Association quite as well as Mr. Ellic Howe has the London Society of Compositors, she has nevertheless provided them and us with a very useful piece of work. An introductory part discusses (somewhat cursorily) Scotland and the part of printing,

and trade union organisation up to 1853. The second and third parts, dealing respectively with 1853–1902 and 1903–52 are designed on the same plan : a general survey of the industry and the Association is followed by chapters on wages and working conditions, provident schemes, apprentices, machinery and women's work, disputes, relations with kindred unions and cognate matters. The Rules of the General Typographical Association of Scotland 1841, a sketch of the various General Secretaries and a table of benefits paid 1853–1902 are printed as Appendices. Oddly enough there is no table of the Association's membership (and indeed little information about it in the text), and none of its branches. No attempt is made to discover the relative strength and recognition of the Association at various periods, though some estimates of the number of fair and unfair offices are available (*e.g.*, in the Social Science Association's Report on Trade Societies, 1860). In general, the serious student would have been helped by a greater number of such appended tables—for example, of recognised rates in different towns. It is also probable that the author has felt happier with the second half of her period than with the first. She has certainly provided rather more, and more fully worked-out information about it.

The Scottish Typographers were (and are) a typical craft union, though with certain peculiarities. Their strength seems, until the 1890s, to have been rather less in the industry than in some parts of England, and in London. The coming of machinery, however, enabled it for the first time to operate effective restrictionism, by eliminating the mass of juvenile labour and of women compositors ; a piquant, but in the printing trade not an unknown, effect. Possibly the union's penchant for taking unskilled or semi-skilled workers under its wing, which has led to some friction with Natsopa and the National Union of Printing, Bookbinding, etc. Workers, dates back to its days of fighting against dilution. On the other hand, it appears to have been a good deal more lukewarm about political action than the London Society of Compositors. Of its general secretaries only one is recorded as having been even a Labour Councillor and none a Labour M.P. Support for the Labour Party in the early stages appears to have been mainly left to voluntary action by members.

E. J. HOBSBAWM

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Central European Democracy and its Background: Economic and Political Group Organisation. By RUDOLF SCHLESINGER. International Library of Sociology and Social Reconstruction. (London: Routledge & Kegan Paul, 1953. Pp. v + 402. 30*s*.)

THIS is an important book, which everybody interested in German, Austrian and Czechoslovakian affairs from 1918 to 1938 should consult, though few will accept its conclusions. But it is not an analysis of "Central European Democracy and its Background—Economic and Political Group Organisation." This democracy, the author argues, has become sectional by creating occupational or vocational mass organisations like trade unions; non-labour occupational sections are but superficially sketched, and even wrongly described by him. Sectional mass organisation "developed a set of functions, which could be taken over by the State"—hence Fascism.

The value of the book lies in its detailed description of the struggles of the labour movements in these three countries, especially from 1918 to 1933; the story of the Communist Party is particularly enlightening, for the author "stood close to the events though not to the persons concerned." Though its best parts deal with Austria, the book might be called "the sins of German Social Democracy."

Dr. Schlesinger simplifies his critical task by minimising and sometimes ignoring the difficulties which beset the German Social Democrats and contributed to their failure: "There is no reason to suppose, that any variation in the setting would have produced a very different external result." But "there can be no doubt that a party of the Russian Bolshevik type, if one had existed in Germany, between January 1918 and August if not October of 1923, would have found half a dozen opportunities to seize power in conditions quite favourable for subsequent Socialist reconstruction. There might have been civil war, but the actual choice was not between peaceful and gradualist democracy and civil war, but between civil war won on the barricades and civil war lost in the torture chambers." This is mere rhetoric. For civil war lost on the barricades by revolting labour might have had appalling consequences for it. The inevitability of civil war seems to be the lynch-pin of Dr. Schlesinger's philosophy. He attacks President Ebert for having said, "I hate revolution like deadly sin," because "peoples and classes cannot be masters of their future, without if necessary accepting low rations and some

casualties" (the price of even a successful civil war might be somewhat higher than this modest estimate).

In one respect Dr. Schlesinger's criticism of the Social Democrats' policy is justified. Eduard Bernstein had shown that some of Marx's main predictions, if not faulty, had at least not been fulfilled; he had, however, retained his belief in the inevitable victory of Socialism through the working of immanent economic forces. "The materialist," he had said, "is a Calvinist without God." He had thus enabled Social Democrats to remain cautious gradualists and orthodox Marxists at the cost of revolutionary fervour. But the Bolshevist success had put an end to this comfortable automatic determinism.

The German Social Democrats had, however, a much better understanding of the strength of their opponents than Dr. Schlesinger, who sees them with the eyes of a caricaturist, as when he says that in Imperial Germany "no member of the middle-class or intellectual had any social standing without being a commissioned officer in the reserve." There may have been one chance for a successful defence. When Papen usurped power the Prussian Government, controlling a very efficient police, might have resisted by armed force, and being supported by its bourgeois partners might have won, as the army probably would not have interfered. But all this is speculation, as are most of Dr. Schlesinger's political conclusions. For history, which has not happened and which can neither be proved nor disproved, does not make good sociology. By treating Germany's, Austria's and Czechoslovakia's particular cases as typical, Dr. Schlesinger may have tried to prove the general thesis, that gradualism is bound to fail everywhere. But his definitions, for example of democracy, are so slippery, and his writing is so involved, that this interpretation may not be justified.

M. J. BONN

London.

Economic Planning in Hungary, 1947–9. By GEORGE KEMENY. (London and New York: Royal Institute of International Affairs, 1952. Pp. x + 146. 12*s.* 6*d.*)

THIS short book is a valuable contribution to the literature of economic planning. The years 1947–49 are, of course, of purely historical interest, over-shadowed by the five-year plan of 1950–54; their significance is due to the fact that it was in this period that Hungary went over from an economy of controls to econo-

mic planning in the Soviet sense. Dr. Kemeny's work provides a detailed analysis of this process, covering both the economic and the administrative aspects. He also describes the antecedents of planning and evaluates the results. He is well qualified to interpret this development for the Western reader. As a former Financial Editor of the leading Hungarian daily newspaper, the *Pester Lloyd*, he was well acquainted with both the Hungarian economic background and with Western economic thought. Moreover, as Under-Secretary for Finance in the Hungarian coalition government until 1948 (when he left the country for political reasons), he was concerned with the initial stages of the planning.

Dr. Kemeny's book is a scholarly and critical survey of the Hungarian experiment; indeed, one feels that he sets almost too high standards for economic planning of this kind to satisfy. Some of his strictures are more appropriate as a criticism of the industrialisation process, which as everywhere became the core of the plan, rather than of economic planning itself. His verdict is that the plan achieved its part-objective of the reconstruction of the Hungarian economy; he is more doubtful about the effect of the plan on the immediate increase in the standard of living. He thinks that the fulfilment of the plan was greatly facilitated by the availability of unused resources, notably man-power, which allowed the reaching of output targets even if the combination of factors was costly.

As for the analysis of the method of planning, it is interesting that at the time of initiating the plan, the Hungarian Government had already complete control of foreign trade and thus of raw-material supplies as well as of a substantial slice of large-scale industry, transport and the credit institutions. The initiation of the plan involved in the first instance strict investment control and an extremely tight credit control, which led to the centralisation of credit operations in the central bank on the Soviet pattern. It is interesting to note that no central control over man-power was introduced until late 1949. Neither was fiscal policy, particularly purchase tax, used as a means of planning, although purchase tax, always a mainstay of the Hungarian fiscal system, provided an increasing part of government revenue and thus also of the means of finance of the programme. Dr. Kemeny's analysis, somewhat too compressed on the financial aspects, seems to refute any supposed similarity on this point with the Soviet system. His work is based, of course, on the examination of original source material; it is a pity that he

does not include a list of the sources consulted or of the most important original documents on Hungarian economic planning for the benefit of other research workers in the field.

L. ROSTAS

Cambridge.

The Muscovy Merchants of 1555. By T. S. WILLAN. (Manchester: Manchester University Press, 1953. Pp. v + 141. 16*s.*)

IN his analysis of the founder-members of the Muscovy Company Dr. Willan has made a notable contribution to the biographical study of economic history. The details of the trade which the Company organised are obscured by the lack of records —the Company's documents were destroyed in the Great Fire of 1666—and a biographical analysis does little to throw light on this problem. It does, however, show up the position and the cohesion of a group of London merchants in the sixteenth century.

Accepting the dominance of London in the export and import trades of sixteenth-century England, Dr. Willan finds in the great merchants of London the mainstay of the great chartered companies of the period, and the natural core of the Company formed after the Chancellor voyage to Archangel. The Company was from the start a joint-stock corporation and, with over two hundred founder-members, it drew support from peers, knights, gentry, officials, lawyers, widows, London merchants and one provincial merchant. The last was Edward Prynne of Bristol, and in view of the part which Bristol and its merchant community had played in the lives both of Richard Chancellor, the "grand pilot," and of Sebastian Cabot, the first governor of the Company, the virtual non-representation of Bristol might seem to need explanation.

Nearly three-quarters of the chartered members were described as "London merchants." At least thirteen of them were members of the Staplers' Company, and at least twenty-six were Merchant Adventurers. There were very few Baltic merchants or Levant merchants—the two trades which the new Company hoped to tap; but there were many who traded to France and more who traded to Spain and Portugal. The strongest connection was with the promoters of the Guinea voyages, which were also financed on a joint-stock basis. Many of these "London merchants" were first-generation immigrants to the metropolis. Their provincial origins were, for the most part, those of

prosperous middle-class families. They were often closely bound together by ties of marriage, of common experience in civic office (at least thirty-two of them had shared the duties and companionship of the House of Commons), while others had shared office under the Crown as financial agents, Customs officials or mint servants. Their chief bonds, however, lay in common membership of the great London Livery Companies.

Such official bonds are most adequately set out. The elusive contacts of common trade have been more difficult to establish. But this brief study gives interesting details of this group of London merchants, owning and hiring ships, in person or in syndicates, engaging in trade on their own accounts with apprentices and factors abroad, as well as in their capacity of members of the Muscovy Company. Some of them were in retail trade, some engaged in the rising industries of the sixteenth century. Varying greatly in wealth, they ranged from the possession of eighteen manors down the smallest leases of city property. Working through the records of the Prerogative Court of Canterbury, Dr. Willan is able to show that for the most part they kept a surprisingly high proportion of their wealth in personal, not in landed, property.

Apart from the intrinsic interest of the attractive monograph, the closely-documented biographical appendix will prove invaluable to all workers in this field. The book is, in effect, a valuable contribution to the study of the pattern of investment as it was affected by the opportunities of sixteenth-century England and by the system of joint-stock finance. It is a great pity that, even when aided by the Tait Bequest, so brief and helpful a study should have to be priced so high as sixteen shillings.

E. E. RICH

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Cambridge.

World Population and Production. Trends and Outlook. By W. S. and E. S. WOYTINSKY. (New York: Twentieth Century Fund, 1953. Pp. v + 1268. $12.)

"THIS book—together with a volume now in progress on world trade, transportation and government, to be published in 1954–represent an effort to put between the covers of two manageable volumes what amounts to a statistical picture of the collective resources, as well as the economic performance and promise of the full array of the nations of the world." The "effort" thus indicated

in the opening sentence of the Foreword can be said partly to succeed. The book will prove most useful for reference, and is arranged logically into five main parts: man and his environment (largely demographic); world needs and resources (including standards of living and productivity); agriculture; energy and mining; manufactures. The tables, maps and diagrams are clear, though appealing to diverse levels of sophistication. And many recent trends and "stabilities" are brought out in which the present reviewer, at least, finds great interest: the closing of the birth-rate gap between different classes and between city and country (pp. 157 and 177), for instance; or the more equal distribution of negroes over the United States (pp. 88–9); or the persistent confirmation of Engel's Law (pp. 272–4), and its extension in America from food and other necessaries to medical services.

Statistics, however, cannot fill in the whole picture, and the authors boldly sketch in some theoretical background to connect their figures. In a book of 1268 pages the reviewer must act as though engaged on " consumer research " and take an arbitrary sample; but he will pick the theory in the very centre of the picture's background. The relation of " World Population and Production " clearly calls for a discussion of Malthus' principle of population, and Mr. and Mrs. Woytinsky do not flinch. Unfortunately their acquaintance with Malthus' Essay appears remote, and they seem to have relied on other authors' accounts of the Essay, if not on other authors' accounts of other authors' accounts. Instead of quoting Malthus' own very succinct statements of his principles, they cite Malthus' simile of Nature's Feast, abandoned in his later editions, and harp on the detail of the arithmetic and geometric progressions. In any case it is not true that " when Malthus wrote his Essay . . . his purpose was to show the foolishness of the poor law system " (p. 285). In the preface to all his editions Malthus states that his essay was suggested by Godwin's views of the perfectibility of man. Malthus' view is in fact much less dated than Godwin's, and it is farcical to say (p. 285) that " the assertions of Malthus on population laws have proved false." His assertions back and connect the statistical picture only too neatly.

Mr. and Mrs. Woytinsky seem to share the common view that the limitation of population growth is somehow alternative to raising productivity. The two are, on the contrary complementary, and both are factors in the remarkable increase in average standards of living achieved by Western countries in this century, as contrasted with the undeveloped countries of the Far East,

East and Middle East. In an admirable table and series of paragraphs setting forth "the characteristics of rich and poor nations," the authors (pp. 349–401) review "the distribution of population and its physical environment" as "a controlling factor in the level of national economic well-being." But they find that "a more significant correlation exists between *per capita* income, on the one hand, and birth and death rates on the other. As one moves from prosperous to poor countries, both birth and death rates seem to increase." Interjection of Malthusian theory on preventive checks (affecting births) and positive checks (affecting deaths) would have been very relevant at this point, rather than its rejection out of hand a hundred pages earlier.

The text, though often misleading in tracing theoretical threads connecting the tables, serves an important function in pointing to the limits imposed on statistical comparisons between countries. Readers are cautioned, for instance, against concluding, as they might from Table 165 (p. 350), that among the women ten times more are employed in Finland than Mexico; or (pp. 356–9) that the proportion of professional among all workers (said if low to be the sign of a "primitive" country) is really in Great Britain only half that of the United States. In the absence of footnotes fully guarding against the different definitions adapted in different countries, the very clarity of the tables may yet prove a pitfall for the unwary. To the wary, however, Mr. and Mrs. Woytinsky have rendered a signal service.

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The Present as History: Essays and Reviews on Capitalism and Socialism. By Paul M. Sweezy. (New York: Monthly Review Press, 1953. Pp. 376. $5.)

The title which Dr. Sweezy has given to this interesting collection of essays and reviews emphasises the all-pervasive theme which runs through them—that the problem of the present, if it is to be understood and solved, must be considered first and foremost as an *historical* problem. The present must be seen in relation to the past from which it has arisen and the future which it will become, and this necessarily involves approaching it from the point of view of some sort of general theory of historical development. Dr. Sweezy's starting-point is Marxism. He is concerned above all to demonstrate that certain basic Marxian concepts—at least when properly developed and adapted to

present-day conditions—are indispensable aids to the understanding of our epoch. At the same time he sets his face firmly against the over-simplification and mechanical application of these concepts which is characteristic of " vulgar " Marxism.

Appropriately enough, the book begins with a very sensible essay on " The Communist Manifesto after 100 Years," in which Dr. Sweezy asks how the *Manifesto* has stood up to the test of experience during its first century. Only in one respect, he argues —their view that socialism would come first in the most advanced capitalist countries—have Marx and Engels really been proved wrong by history. The reason for their mistake, in essence, was that they did not foresee that capitalism would eventually enter a new stage—that of " imperialism "—which for various reasons would enable it, at least temporarily, to " dig in deep in the advanced countries of western Europe and America " (p. 26). It is with the anatomy of this " imperialist " stage of development that Dr. Sweezy is primarily concerned in most of the articles which follow.

The essays dealing with the character of western capitalism to-day range from solid pieces of research, such as the path-breaking study on " Interest Groups in the American Economy " (first published in 1939 as an appendix to the report of the National Resources Committee on *The Structure of the American Economy*), to a number of rather more ephemeral and journalistic items from periodicals such as *Monthly Review* (of which Dr. Sweezy is co-editor) and *New Republic*. Some of the more slender of the latter might with advantage have been omitted from the collection. Others, however, are of higher quality—notably " A Marxist View of Imperialism " and " The American Ruling Class," two *Monthly Review* articles in which Dr. Sweezy attempts to give precise and up-to-date content to two basic Marxian concepts. Attention should also be drawn in this connection to " The Illusion of the Managerial Revolution," a closely-knit and effective attack on Burnham.

To most readers of the ECONOMIC JOURNAL, however, the two final sections of the book, entitled " Thinkers and Theories " and " Some Problems in Political Economy," are likely to be of more interest. " Thinkers and Theories " contains seven essays and reviews, including a well-known obituary article on Keynes and an exceptionally stimulating piece on Schumpeter's theory of innovation. The final section includes a fairly popular article on " Marxism and Orthodox Economics "; a perceptive review of the Jubilee Edition of the *Fabian Essays*; a reply to certain critics of

Dr. Sweezy's *Theory of Capitalist Development*; and three other articles which appear here for the first time. One of these, " A Crucial Difference between Capitalism and Socialism," which compares what happens under each of these systems when a process of industrialisation comes to an end, is particularly timely in view of the recent economic changes in the U.S.S.R.

One of the leading ideas running through Dr. Sweezy's critique of orthodox economists is that they have too often " misunderstood or ignored the role of profit in capitalist society as a whole " (p. 351). This idea is, of course, developed as a corollary of the major themes elaborated in the earlier part of the book. Keynes comes in for a certain amount of criticism under this head, and the Fabians are accused (on the evidence of the *Essays*) of treating profit as a phenomenon of secondary importance when compared with rent. But it is in the essay on Schumpeter that the idea emerges most clearly. Dr. Sweezy argues that Schumpeter's conclusions regarding the mechanism of economic change spring logically from his implicit assumption that in the " circular flow " society is divided into two classes, landlords and others, and everyone has equal access to " capital." In such circumstances, Schumpeter's supposition of the primacy of consumption motives is a reasonable one, and in order to explain economic development it seems necessary to bring in a force from outside—the entrepreneur. If, however, we started off with a situation in which there were not only landlords but also " a special class of individuals having exclusive control over the means of production other than land " (p. 278), then although we could still make this economy stationary by supposing the primacy of consumption motives, this supposition would be much less plausible than it was before. There would in fact then exist, Dr. Sweezy argues, both the power and the motive to accumulate, and surpluses and accumulation would begin to appear not as the consequence but rather as the cause of economic change. What Dr. Sweezy is saying, in effect, is that modern economics has too hastily discarded the old Classical notion that profit is something which is exuded, as it were, by the labour–capital relationship itself (even in the absence of innovation), and that an economic system founded on this relationship necessarily contains within itself the forces making for accumulation and innovation. This is a point which has often been made by Marxian economists, but it has rarely been made so persuasively.

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NOTES AND MEMORANDA

Instability of Primary Product Prices: A Protest and a Proposal

A good deal has been written in recent years about the instability in the prices of primary products and the evils resulting therefrom. Important examples are two studies issued by the United Nations: first, *Instability in Export Markets of Underdeveloped Countries* issued in 1952; and the second *A Report of a Committee on Commodity Trade and Economic Development* issued in 1953. The first shows statistically the extent of instability, and the second attempts to put forward certain remedies. Both accept as axiomatic that instability is a bad thing, but in neither is there any real attempt to work out the economic rather than the statistical facts about instability, or to assess the true disadvantages of it.

It is shown, in elaborate detail, that instability produces great variations in the income of certain individual countries; it is inferred that those countries will necessarily be faced with particular difficulties in the execution of development and investment programmes and in maintaining non-inflationary internal policies. Other evils are added; *e.g.*, it is demonstrated (perhaps unnecessarily) that the more specialised a country's industries and the smaller the economic unit, the greater is likely to be the range of fluctuation of its total income. Dire conclusions are inferred from calculations of the terms of trade based on the assumption that primary producing countries import nothing but manufactured goods (in practice, of course, they import each other's primary products also). By arguments which are logically impressive but unconvincing to common sense it is shown that increases and decreases of income are both bound to produce inflation. As a final addition to the train of evil, the second report shows that whereas economically developed manufacturing countries tend to have a more favourable balance of payments in depression and a less favourable one in boom years, primary producers have the opposite pattern.

This last conclusion deserves further attention as indicative of a state of mind. No more startling statistical revelation has been made since the famous discovery that very nearly 50% of the population of the United Kingdom are less than the average height.

Even the most elementary student of the theory of foreign trade knows that it is not possible for all countries to have unfavourable balances of payments at the same time. If there are countries whose balances are moving unfavourably, there must of necessity be others which are moving favourably. Now it does happen that people whose income is notoriously liable to wide fluctuations do tend to put aside money in times of high income and to use it in times of low income, and this is just what primary producing countries have been doing. They have a favourable balance of payments when their incomes are high, that is they tend to build up external reserves, and they spend some at least of those reserves in periods when their incomes are low, and therefore have unfavourable balances of payments. This additional evil thus turns out to be a very proper and sensible compensatory action to ensure that actual levels of consumption do not vary quite so violently as export incomes.

If so much naïvety is to be found in a report of such authority it is hardly surprising that so much of the discussion of instability of primary product prices is at such a primitive level. In very little of it is to be found any real discussion of the effects of variation over a period of time in the rate of receipt of a given total income. Presumably writers on the subject are not merely complaining of the failure of the income of primary producers to maintain itself always at the highest levels, and they would no doubt agree, if the point were put to them, that what they are concerned about is the amount of variation around an average. None the less, it is impossible to resist the conclusion that much the greater part of the discussion is inspired by the thought that it would be a very much happier world for primary producers if their incomes were always at boom levels.

The economic as distinct from the statistical problem of instability is not whether a high income is better than a low one, but whether on balance it is better to have an absolutely steady income or one that varies more or less substantially from the average of the period under consideration. Most of the discussion takes for granted that variation is itself an evil, and the United Nations study of instability in export markets is indeed written in terminology which would convey, at least to an incautious reader, that upward variations are just as bad as downward. It is not, however, to be taken as axiomatic that stability of income is always "better" than fluctuation. It depends very much on what one means by better. It may certainly be better for the peace of mind of many individuals, and especially for the peace of

mind of government planners. The criteria usually adopted, however, in discussions of this kind are the rates of growth in the economy, and particularly the levels of total investment resulting from any given degree of instability. It is here that the axiomatic assumption of disadvantage in fluctuating income is particularly open to challenge. It is true that the kind of planning of investment which spends income long before it is received is rendered more difficult, but if investment and saving are conducted on a more sober basis, and money is spent only when it is fairly clearly in sight it may well be that instability results actually in greater rather than less saving and real investment.

Normally with individuals the proportion of income saved is greater after a marked increase of income. Very much the same is true of communities, and when the initial fluctuation is upwards it is almost certain that the first effect will be that the proportion of income saved will be particularly high. It may then follow that in a subsequent period of lower prices and incomes a portion of the saving will be spent for the maintenance of consumption, but it is probable that a fair amount of it will be spent on genuine investment, and it is by no means improbable that the total investment over the period will be larger than if the same income had been received equally spread over the period of years concerned. Certainly the record of actual investment, primarily from local resources, in countries of such notoriously unstable export income as Malaya does not suggest that it is impossible to build up a very respectable capital equipment in such circumstances.

Of course there is always the temptation before individuals, corporations and governments to assume that boom times are going to last for ever and to commit themselves at such times to programmes of investment or other expenditure which in fact they cannot carry on when the boom comes to an end. It is by no means axiomatic, however, that all primary producers and all the governments of primary producing countries will be so misguided, especially when past experience provides a warning of probable instability. Where they are disposed to behave improvidently it is probable that they would do so anyway, that is they would always over-estimate their probable future resources, and would therefore in any case run into the kind of difficulties of internal inflation and external balance-of-payments problems which are now commonly attributed to the evil of price instability. That this is so is again suggested by the fact that a quite substantial group of primary producers, the British Colonial dependencies, have in practice over a long period of years never

had the balance-of-payments problems or internally induced inflation which are supposed to follow with absolute certainty from the price instability which they have experienced equally with other producers of food and raw materials.

I am not suggesting that there are in fact no evils of instability; and indeed there are many things which could be done to prevent it which are less frequently recommended than they should be. What I am suggesting is that the facts are nothing like as simple as so much public discussion and so many authoritative reports assume.

The subject would, I believe, be greatly illuminated if those interested in it would stop deploring the refusal of prices (and the factors which influence them) to stay put and would devote themselves to the study of the real consequences and the connected phenomena. The subject is not, after all, a new phenomenon; prices have been fluctuating ever since there have been prices, and a lot of information ought to be available about the results of fluctuations. As a first list of research topics I suggest:

(1) What are the effects of sharp increase in primary producers' incomes on: (*a*) consumption, (*b*) saving, and (*c*) investment? Do they save more or less out of an increment of income than out of a steady flow?

(2) What are the corresponding effects of a sharp decrease of incomes?

(3) Is the behaviour of a "primary producing country" significantly different in these respects from that of a group of primary producers within a political unit?

(4) Can one draw any conclusions about the probable average levels of consumption and investment among economic groups of stable and unstable earnings respectively?

(4) How does the behaviour of individuals, institutions and governments adjust itself to the expectation of instability? Are there significant differences in the behaviour of different types of economic units, *e.g.*, externally controlled firms, locally controlled firms and agricultural smallholders or other small-scale producers? Do distinctive institutions (*e.g.*, special types of banks) develop? How is banking practice affected?

(5) On the other hand, how is behaviour adjusted to the expectation that fluctuations (especially downward fluctuations) will be prevented by a beneficient Providence in the shape of "international action"?

(6) To what extent can earnings (export or otherwise) from the sale of produce be replaced by income from internally consumed

products—as the Indonesian smallholder can shift from rubber to rice and vice versa?

(7) How far does waste occur in the use of savings for actual investment because of the irregular flow of savings, as distinct from the other frequent errors of investment in underdeveloped areas?

(8) What internal devices can be used to mitigate the effects of fluctuation? Are special tax policies appropriate? *e.g.*, tax encouragements to the setting aside of reserves, or steeply graduated export duties? Are special reserve or other requirements needed in banking laws? What should be the policy as regards general Government reserves? What are the implications for choice of currency system and kind and proportion of currency backing? What role can be played by stabilisation or marketing boards, and how should they conduct their practical policies?

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A NOTE ON THE DETERMINATENESS OF EQUILIBRIUM

THIS is in response to Mr. N. Ray's comment on Marshall's demonstration concerning indeterminateness of equilibrium in barter.[1] The problem relates to the formation of price in a daily market where the stocks of goods to be exchanged are fixed.

It is well known that Marshall explains determinateness of equilibrium on the assumption that the marginal utility of money is constant. In the corn-market example (*Principles*, Bk. V, Chap. II), where corn is exchanged for money, equilibrium is determinate. In the apple-nut case (*Principles*, App. F), which is a case of barter between two goods, the equilibrium is indeterminate.[2] In either of these cases the parties come to the market without any knowledge of each other's strength and inclinations. The market therefore starts with "false" prices. However, in the corn-market case, since the marginal utility of one of the goods—money—is assumed to be constant, the final rate is

[1] ECONOMIC JOURNAL, December 1953, pp. 917–19.

[2] There is an arithmetical slip in the illustration given by Marshall in the Appendix on Barter (*Principles*, 7th edition, pp. 791–2), which may be noticed here. In the case of *B*, the holder of nuts, having the upper hand in the bargain, *A* is supposed to be induced to give six apples for fifteen nuts. Since, however, *A*'s initial comparative utility of apples and nuts is assumed to be 1 : 3, six apples cannot be exchanged for anything less than eighteen nuts.

independent of these "false" prices, or in other words, it is independent of the amount of money that passes from the buyers to the sellers in course of the transactions. In the barter case the final rate is dependent upon the initial rate and the intermediate rates, and may lie anywhere within the limits set by the comparative utilities of the goods on the part of the two parties.

It is significant that Marshall does not use curves in this context. As he writes to Edgeworth, "I never apply curves or mathematics to market values. . . . *Ox* for market values measures a stock and not a 'flow'; and I found that, if I once got people to use Demand and Supply curves which discussed *stocks* along the axis of x, they could not easily be kept from introducing the notion of stock when *flow* was essential" (*Memorials of Alfred Marshall*, Ed. Pigou, p. 435). Mr. Ray introduces what I would call the Edgeworth–Bowley diagram, based on indifference curves, and fixes his eyes on the point of intersection (H) between the so-called "price consumption curve" and the "price offer curve," arguing that, while in the case of bilateral monopoly the equilibrium may lie anywhere on the contract curve, perfect competition will set the ultimate equilibrium price at H, irrespective of whether the marginal utility of money is held constant or not. It looks as if this is a position similar to Edgeworth's. "(α) Contract without competition is indeterminate, (β) Contract with perfect competition is perfectly determinate, (γ) Contract with more or less perfect competition is less or more indeterminate" (Edgeworth, *Mathematical Psychics*, London School Reprint, p. 20).

However, whereas Edgeworth arrives at his result by way of "recontract," which precludes transactions at "false" prices, Mr. Ray jumps to the conclusion that even if transactions begin at "false" prices, equilibrium will be determinate under perfect competition. This surely is an illegitimate deduction. As Mr. Ray rightly points out, *à la* Hicks, the assumption of constant marginal utility of money amounts to ignoring income effects on the part of buyers and sellers. If, however, income effects are allowed for, and some transactions are assumed to take place at "false" prices, there is no reason why the final equilibrium should not be dependent on the "path," whatever the "field" of operation may be. In the type of market that Marshall has in view constant marginal utility of money is indeed a necessary condition for determinate equilibrium. An alternative assumption would be that suggested by Hicks, namely that the buyers' income effect and the sellers' income effect—which run in opposite

directions—cancel out (Hicks, *Value and Capital*, 2nd Edition, p. 129).[1]

What, then, are we to say about Marshall's treatment of international values? The treatment runs in barter terms, and yet Marshall works with the concept of determinate equilibrium, relying simply on the assumption of "free competition." On the other hand, there is a reference to the need for "a little 'trial and error' if the trade is new" (see *Money Credit and Commerce*, p. 164). This seems, on the face of it, to suggest that the hypothesis here is on a par with that in the apple–nut case. The interpretation of this apparent anomaly seems to be that, in the context of international values, Marshall has in mind the possibility of *recontract through time*. Marshall's international trade curves are *normal* (in the sense of "long period") demand-and-supply curves of competing traders of E and G countries; they refer to a "flow," and not to a stock.

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Sterling Balances and the Colonial Currency System: A Reply

My note in the Economic Journal of December 1952 attempted to demonstrate that an increase in a colony's currency circulation under the existing regulations forces the colony to save an equivalent amount of its sterling resources, and hence reduces its ability to import, even though the sterling deposited with the currency authority is *initially* provided by a United Kingdom enterprise such as a trading firm. In her comment [2] Dr. Greaves makes no reference to the later stages of the process of currency expansion, although it was on an analysis of these that my whole argument hinged. In effect, she merely repeats her earlier assertion that the currency rules impose no restriction on imports because the currency issue is financed from the United Kingdom.

I cannot see anything in Dr. Greaves's note to destroy my belief that sterling cannot be spent on imports so long as it is held as currency backing. It is difficult to see why she should think

[1] When the two income effects cancel out, it can be shown, by combining the demand curve of buyers and the reservation–demand curve of sellers in the Wicksteedian manner, that the different points on the combined demand curve are co-existent, and that the final equilibrium rate is determinate, being that at which the buyers and sellers, between them, take off the entire stock. Obviously, the less imperfect the market is, the greater is the possibility of the two income effects cancelling out, and the less, too, is the chance that the market should start with very "false" prices. [2] Economic Journal, December 1953.

" palpably absurd " the view that people cannot both hold currency and have the things it would buy. This seems to me to be a truism of the " you can't have your cake and eat it " variety. The special feature introduced by the colonial currency regulations is that the holding of currency immobilises a corresponding value of the colony's external purchasing power. In territories where the use of bank money is little developed this immobilising of external purchasing power is quantitatively important.

Dr. Greaves quite correctly says I did not refer to the fact that banks will not redeem currency temporarily surplus to their needs if there is no net gain from doing so. But she does not make clear the relevance of this to the point at issue. There is, indeed, something more to be said about currency held by expatriate enterprises. On reflection, I realise that my argument could have been stronger than I made it. I suggested that expatriate banks and firms were responsible for financing that part of the currency circulation which they were holding. While in a sense this statement is correct, it does not sufficiently emphasise the fact that it is only the existing reserve provisions which prevent any of the sterling backing of that currency from being spent.

In fact, the whole answer to Dr. Greaves can be expressed in this way, in addition to the way I originally put it. Sterling funds to finance a currency expansion may be provided by United Kingdom enterprises. But this is not a consequence of the existing colonial currency system. A United Kingdom enterprise operating in a colony will presumably have its capital funds in sterling, part of which will be used to buy local currency. Whatever the currency reserve regulations, the funds paid over for currency would accrue to the sterling resources of the colony. The effect of the 100% reserve system is to compel the holding of this sterling and to prevent any of it from being spent on imports. Looked at from this point of view as well, therefore, the colonial currency system may be seen to enforce a saving of colonial sterling income, with a consequent reduction of imports below what they could be. The facts Dr. Greaves is fond of emphasising, that currency expansion is " financed with sterling from banking and trading accounts somewhere in the United Kingdom," and that " the London funds precede the distribution of colonial income," are seen not to affect the matter, once one takes the trouble to look behind superficial appearances.

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Sterling Balances and the Colonial Currency System: A Comment

The currencies in the hands of individual holders in the Colonial Territories indeed entitle them, as Miss Greaves remarks,[1] to the equivalent in purchasing power, whether that power is exercised for local or for imported goods and services. These holders are obviously making a normal economic choice: that of holding their resources in the most liquid form available; and by so doing they cannot be said to have any hardship imposed on them—on the contrary. At the same time the fact, pointed out by Mr. Hazlewood,[2] that the existing system of colonial currency issues has built up in London a large balance of sterling to the credit of the Colonial Currency Boards, a balance which is, in fact, a loan from the colonies to the British Government, is incontrovertible. Such a loan obviously means, as Mr. Hazlewood points out, a postponement by the colonies, and hence by their inhabitants, of their claims to goods and services which they could purchase from the United Kingdom. Both Miss Greaves and Mr. Hazlewood are, therefore, right in their main arguments. The connecting link between their apparently contradictory points of view is provided by the present-day normal practice of treating currency issues as (normally interest-free) loans by the currency-absorbing population to the currency-issuing authorities: the latter do not have to immobilise any of their own resources *pari passu* with the issue of fresh currency. In the case of the Colonial Currency Board systems this currency-issue is, in practice, ultimately made by the United Kingdom Government, who is thus borrowing the equivalent in claims to United Kingdom goods and services from the colonial populations concerned. Through the indirect arrangements (via the Colonial Currency Boards) for these transactions, and because interest is paid by H.M. Government on these loans, the similarity between the United Kingdom Government's note issue at home and in the colonies is obscured. The problem may be seen more clearly if we were to assume that (as is now being increasingly requested in colonial territories) some locally established institutions were to become the issuing authorities and, according to United Kingdom practice, they were to provide no cover for the issued currencies.

[1] "Sterling Balances and the Colonial Currency System: A comment," Ida Greaves, Economic Journal, December 1953.

[2] "Sterling Balances and the Colonial Currency System (A Note)," A. Hazlewood, Economic Journal, December 1952.

In that case the sterling balances (*i.e.*, the loans to the United Kingdom) now held by the Currency Boards would be taken over by the local issuing authorities, and could be immediately used for purposes such as local investments or as loans to their own Governments. As Miss Greaves indicates, the *individual* holders of local currencies would be in the same position as before; but, as Mr. Hazlewood argues, the respective *communities* would have access to the additional resources, in sterling, set free by this change—or at least to part of them, as some sterling balances will always have to be held for purposes of international trading and payments transactions, including capital movements within the sterling area.

Whether such resources could always be more profitably used by the colonial populations in direct investments in their own territories than they are to-day as interest-bearing loans to the United Kingdom, or whether the Colonial Territories have yet reached the stage when such experiments in fiduciary currencies could be safely undertaken, are entirely different, and much more complex, questions.

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TERTIARY PRODUCTION: A POSTSCRIPT

WHEN one encounters critics such as Mr. Bauer and Mr. Yamey, who have passed from the rejection in 1951 of the thesis that "economic progress is generally associated with . . . a relative increase in the numbers employed in tertiary activities" [1] to the more radical position in 1954 that the tools traditionally available for analysing the problems of change and occupational movements neither require nor are likely to receive any assistance from the classification of economic activity into primary, secondary and tertiary,[2] the most appropriate attitude is perhaps one of regretful silence. We all have our individual preferences in the choice of the concepts that we find useful, and it takes all sorts of economists to make up the world of economic science. We may regret that Mr. Bauer and Mr. Yamey have not found the concept of tertiary production useful, but there is not much that can be done about it.

[1] "Economic Progress and Occupational Distribution," ECONOMIC JOURNAL, December 1951, p. 741.

[2] "Further Notes on Economic Progress and Occupational Distribution," ECONOMIC JOURNAL, March 1954, pp. 98–100.

Lest, however, some who are not yet well acquainted with the concept and its implications should be unduly discouraged from further investigation by their critical remarks, one or two supplementary observations may be permissible.

Tertiary production has never been offered as in any sense a substitute either for all or for any of the standard tools of economic analysis, " relative factor prices, relative product prices, terms of trade " and the rest of them.[1] All the leading roles in the drama of economic analysis are still reserved for these powerful instruments. The part suggested for tertiary production is much more modest, and on a much lower plane. It is suggested merely as a simple classificatory device, which, at least for some observers, may help in sketching a tolerably clear picture of the extraordinarily complex real world to which the standard tools have to be applied.

The fallacies implied in Mr. Walter Elliot's epigram, now twenty years old, " When you lock us out of the factories, you lock us into the fields," are still powerful forces in moulding public opinion on public policy. It may be that no economist to-day needs any guidance to ensure that he will reject these fallacies, and that the concept of tertiary production is therefore not *necessary* " for driving home the fundamental truth that there is no invariable natural ' balance ' between types of production." [2] Public opinion in general, however, is certainly not so enlightened, and the attention so far given to the concept of tertiary production has not been so intensive as to necessitate the rejection out of hand of the hope that, if it were more carefully used, it might at least be *useful* as an educational instrument. A perusal of the learned economic journals indeed suggests, at least occasionally, that reflection upon the concept of tertiary production might help to clarify the thinking even of some highly skilled economists.

It is not so long ago that the United States Secretary of Agriculture was much embarrassed by the suggestion that his programme meant that " the marginal farmer should get out of farming and into something else." Reflection upon tertiary production is indeed no guarantee of clear thinking on such problems, but it is interesting, though maybe also idle, to speculate whether the Secretary's advisors might have been more successful in briefing him to deal with such embarrassing questions if they had had a clearer understanding of the significance of tertiary production for the United States economy.

[1] " Further Notes on Economic Progress and Occupational Distribution," ECONOMIC JOURNAL, March 1954, p. 99. [2] *ibid.*, p. 100.

Happily the charge cannot be laid against tertiary production that it is merely " an empty economic box." The main criticism to which it can perhaps be fairly subjected is that the box is so full that, in the effort to get everything into it that should properly go there, some things spill over the sides so that there is some embarrassing ambiguity about their appropriate allocation. Partly with a view to removing this difficulty, it has recently been suggested that some additional partitions should be inserted in the box, and that to tertiary production we should add " quaternary " and " quinary production." [1] The value of such further elaboration has yet to be tested; it would be a matter for satisfaction if it should produce results as illuminating as those which the concept of tertiary production, despite their formal rejection of its usefulness, has elicited from Mr. Bauer and Mr. Yamey.

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A NOTE ON THE DEFINITION OF NET NATIONAL PRODUCT

THE purpose of this note is to correct small logical errors which are made in current definitions of net national product at factor cost and of gross national income at market prices.

The equations showing the relation between net national product at factor cost and gross national product at market prices and at factor cost are usually set out as follows:

Net national product at factor cost	=	Gross national product at market prices	*less* indirect taxes *plus* subsidies	*less* depreciation
	=	Gross national product at factor cost	*less* depreciation	

For convenience, let us assume that depreciation is calculated at current prices and that the capital stock of the economy has been constant for a long time so that depreciation allowances are equal to the aggregate purchases of equipment for replacement purposes. Now the prices which are used for the purpose of calculating depreciation are current *market* prices of capital goods, *i.e.*, the prices include indirect taxes and exclude subsidies on capital goods bought for replacement. Consequently, in the above equations the indirect taxes on replacement capital goods are deducted twice, and the subsidies are added twice. This

[1] Nelson N. Foote and Paul K. Hatt, " Social Mobility and Economic Advancement," *American Economic Review*, May 1953, pp. 364–7.

double counting can be avoided by valuing depreciation at factor cost, so that :

Corrected net national product at factor cost	=	Gross national product at market prices	*less* indirect taxes *plus* subsidies	*less* depreciation at factor cost
	=	Gross national product at factor cost	*less* depreciation at factor cost	

On the income side, a similar adjustment must be made to obtain the corrected gross national income at market prices.

Corrected gross national income at market prices	= Gross factor incomes	*plus* indirect taxes on consumption and net capital formation *less* subsidies on consumption and net capital formation

The adjustments suggested above are of little importance in the United Kingdom. The figures for depreciation in the official accounts are derived mainly from the Inland Revenue allowances for taxation. If, however, for some future year the official statisticians present a figure for " true " depreciation at current prices, the allocation of indirect taxes and subsidies should also be attempted. In general, the correction is important where there are large taxes or subsidies on capital goods or when the taxes or subsidies change considerably from year to year.

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MR. KALDOR ON INDUSTRIAL FLUCTUATION—A METHODOLOGICAL FOOTNOTE

IN a most interesting recent article Mr. Kaldor presents an extremely clear and definite model of industrial fluctuation,[1] based upon very precise assumptions. I wish, first, to show his assumptions insufficient for an exclusively valid model, second, to indicate certain limitations and certain mathematical inconsistencies in the model itself. To put my basic point in a nutshell, Mr. Kaldor never distinguishes sufficiently in his paper between a *possible* story and a *true* story. I submit, however, that one of the most fundamental principles of scientific business-cycle analysis is that it is never enough merely to show ways in which a cyclical movement *could* occur—granted certain assumptions. The problem is to find out *empirically* and historically which one

[1] N. Kaldor, "The Relation of Economic Growth and Cyclical Fluctuations," ECONOMIC JOURNAL, LXIV, March 1954, p. 53.

of these possible stories has empirically occurred and is most likely to recur. A logical model by itself proves nothing unless its assumptions are so broad and so exclusive *a priori* that no other explanation is possible. The question I wish to ask here is: Are Mr. Kaldor's assumptions of this conclusive character?

A key statement of his article is found on page 54:

> "For the current rate of profit per unit of capital (or rather per unit of investment) *clearly* (italics added) depends on the current relation of output to capital (at any rate if, as a first approximation, profit per unit of output can be taken as given) so that the rate of investment will increase with a rise in output and/or a diminution in the existing stock of capital and *vice versa*."

On p. 63, however, Mr. Kaldor states:

> "It is possible to introduce endless complications into the model which would tone down its sharp edges and crudities—as, *e.g.*, that investment is influenced by finance, monetary policy or rising production costs, etc.; that new inventions take the form (in part) of the creation of new industries satisfying new "wants" which would explain why some investments would go on even during a depression, etc.—though it is doubtful whether *in our present state of knowledge* the laborious task of working out the consequences on the model of any particular type of complication would be really worth while" (italics added).

Mr. Kaldor's modifications are of particular interest to the present writer. For in my *Economics of Disturbance*, published in 1947, I presented models quite similar to those shown by Domar, Kaldor and others, and indicated the fascinating possibilities implicit in the analysis.[1] Why did I not carry them further? The trouble was that similar modifications to those which Kaldor now most correctly details, in the second quotation here given, did not, it seemed to me, merely "tone down the sharp edges and crudities" of the model—they destroyed its *a priori* necessity.

Take first a logical weakness of Mr. Kaldor's model. He assumes, in effect (p. 58), that his business-men are always 20% wrong in their estimates. And that though this constantly recurs, and there are *no* other disturbances, they never *think* to revise calculations or space out orders. This is assuming automatons not men. Schumpeter used to point out to me that the reason a cycle would not survive in an otherwise stationary state

[1] D. McCord Wright, *Economics of Disturbance* (New York: Macmillan, 1947), especially Chapter VI.

was because business-men would *revise* their plans and expectations so as to eliminate it (assuming no new disturbing forces to obtrude). Mr. Kaldor gets his cycle by depriving his business-men of the faculty of self-criticism.

Equally unreal must be the assumption needed to build up (under the case of a fixed service-life) his five-year boom, five-year slump cycle (pp. 58, 59). This involves the problems of pace plus the age composition of the desired capital stock discussed in Chapter VI of my *Economics of Disturbance*. To get his cycle, his business-men would have to stop after the first five years, and wait five years before starting again, though the total desired shipping park is 15 million tons—not five. Why?

But worse yet his selected service-life of twenty-five years will not give the cycle he describes (p. 58). If the replacement "echo" is allowed for (as must be done if we follow Kaldor's own initial assumption of a *rigidly* determined service-life, p. 59) the cycle, once the initial stock is built up, would have booms of alternate lengths—ten years, five years, ten years, five years, with regular five-year slumps between them.

True, had Mr. Kaldor assumed a service-life of *thirty* years his model would have been consistent. But this involves assuming further unreality, namely, that the service-life should *chance* to be exactly, in each case, the one mathematically consistent (given the "capacity" of the investment industries) to produce a regular cycle. Of course, Mr. Kaldor later drops the assumption of fixed service-life and if we do this we can drop the "echo." But even so, most of his abstractions and their paradoxes remain.

Thus even if amended to take care of internal inconsistency, the methodological inadequacy of the Kaldor–Domar approach is easily indicated. One selects certain favorable assumptions. One omits all rival accounts, and on this highly selective basis one produces a most persuasive story. But where is reality? It is not my purpose here to repeat the theory of economic growth and the cyclical models developed in my *Capitalism* (published 1951), in which Mr. Kaldor's assumptions, especially those regarding the relation of investment to the capital stock, are explicitly disintegrated.[1] Suffice it to say that by the same selective method which he follows many equally plausible tales could be told. Known facts can be explained by dozens of models. If we are simply to dismiss all alternative models by reference to the "present state of knowledge," we may equally well dismiss Mr.

[1] D. McCord Wright, *Capitalism* (New York: McGraw-Hill, 1951), especially Chapter V.

Kaldor's. It is not enough to prove the *exclusive* validity of a theory that all the phenomena follow. Much more practical and pragmatic research and demonstration is needed.

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THE SIZE OF THE FACTORY: A REPLY

READERS of the ECONOMIC JOURNAL must all be grateful to Mr. G. R. Allen for drawing attention, in the issue of December 1953, to the official Swedish statistics allowing measurement of the trend in sizes of factory. The Swedish data are certainly fuller and more continuous than those of most European countries; but their very fullness allows of a more accurate measure of factory sizes than the mere number of workers per factory which Mr. Allen uses. Though usually number of workers, as I have said elsewhere,[1] " is the least objectionable of the indices made possible by official censuses " it must not be forgotten that the real point at issue is the scale of output and that this depends not only on number of wage-earners (workers, or " operatives "), but also on number of salary-earners (or staff) and on capital equipment. With the rapidly increasing ratio of staff to operatives observed in industrialised countries and the increasing intensity of capital, these elements in scale of output can no longer be neglected. Fortunately, the Swedish Census provides the required data for the salary-earners and gives in its horse-power ratings some index of capitalisation.

Mr. Allen finds that Swedish experience bears out Professor Jewkes' conclusion that " there is no general tendency for the average size of the factory to increase." Let us accept Mr. Allen's figures of the average number of workers for all factories where more than ten workers are employed (ECONOMIC JOURNAL, Vol. LXIII, p. 915), but add the percentage which staff form of those workers, and the average horse-power per worker. These ratios are not available separately for different sizes of factories, but can be obtained for all sizes. More recent figures and ratios can now be given, with cautions (duly footnoted) on account of a change between 1945 and 1946 in the scope of the Census.

[1] *Investment, Location and Size of Plant*, 1948, p. 13.

Sweden

	Average number of workers (in factories employing over ten).	Staff as a percentage of workers (all sizes of factory).	Horse-power of equipment per worker (all sizes of factory).
1925	72·8	10·2	3·91
1930	72·4	11·3	4·30
1935	68·4	13·0	4·97
1940	72·9	15·0	5·52
1945	69·6	18·7	5·92
1946	[1]	19·5 [2]	5·90 [2]
1950	69·9	22·4 [2]	7·10 [2]

[1] Not available. [2] Factories employing five or more workers only.

The numbers of wage-earners in the average of Swedish factories have remained fairly constant throughout the last quarter-century, but not so the horse-power or the staff: capital reckoned by horse-power has increased over 75%; staff at least 100%. What these increases represent in increase of physical volume of (net) output per factory—the real point at issue—could, in a short note, only be assessed seemingly arbitrarily.[1]

Some countries, however, do venture to publish data on which to base volume of production per establishment from time to time, and Professor Jewkes, in his article in the ECONOMIC JOURNAL for June 1952, has very usefully summarised results for the United States, Canada, Germany and Australia. The average United States factory is shown to have increased its volume of production from the first three years quoted (1914–21) to that of the last three (1935–39) by 66%, and I cannot understand why in the light of his own table (p. 240) Professor Jewkes concludes that here the average overall size of factory had not grown.[2] In Canada by the same fair three-year test the index of volume of production per establishment rose from 1922–25 to 1937–39 by 22%. In Australia, again by the same test, the index rose from 1913–23 to 1935–38 by 45%. In Germany only four separate years—1895, 1907, 1925 and 1933—could be quoted. In the last of these years

[1] The next footnote points toward a possible empirical basis for such an assessment.

[2] In making this statement about the United States factories, Professor Jewkes may have been looking only at the first column of his own table, giving wage-earners per establishment. The divergence of the trend in this column and in the volume-of-output-per-establishment column can be explained by the same additions of staff and horse-power figures made for Sweden. The following table gives United States data for the years in which they were available. Figures in the first and fourth columns are copied from the diverging first and third columns of Professor Jewkes' table; the second and third columns are the "missing links"

the volume of output per establishment was 28% above that of the first year; the volume of the last two years was 10% above the first two.

In Great Britain the Census authorities do not venture toward any index of volume of production per establishment. They have, alas, seen fit to abandon the measure of horse-power, though sensibly they include staff with operatives in classifying factories into sizes. We are left, then, with average persons employed per establishment as an index of trends in its size. Professor Jewkes shows that on this test the average size of factories employing over 10 has grown between 1935 and 1949 from 105·4 to 126·1. But he contends that since "in the former year there were some 600,000 more workers unemployed in the factory trades than in the latter," an adjustment must be made. "If these 600,000 workers had, in fact, been employed in 1935 in the existing factories, this would have increased the average size of factory in 1935 by about 12%."

This adjustment must be characterised as crude. It entirely neglects the possibility, nay the probability, that as well as the numbers employed, the numbers of factories will diminish in a slump. The American Censuses were taken biennially during the 1929–37 depression, and are illuminating. Professor Jewkes himself gives in his Table I (*op. cit.*, p. 240) the averages of wage-earners per establishment: 40·5 in 1929, 35·9 in 1931, 41·5 in 1933, 42·9 in 1935, 51·4 in 1937. Clearly the years of recovery from slump, such as 1935 in both America and Britain, were not necessarily marked by a figure of wage-earners per establishment low compared to boom years. On the contrary, though the onset of a slump (when many wage-earners are laid off, but the original number of establishments has not fallen proportionately) showed a fall in the numbers per establishment; later in the depression a greater proportion of factories go out of existence which are not replaced by others. The number of establishments in the United States

(growth in staff and horse-power per wage-earner) helping to explain the outpacing of wage-earners by output per establishment.

U.S.A.

	Wage-earners per establishment.	Staff as a percentage of wage-earners.	Horse-power per wage-earner.	Volume of production per establishment.
1914	37·3	13·6	3·21	100
1919	40·1	17·0	3·24	104
1929	40·5	16·2	4·86	154
1939	42·8	20·0	6·42	166

fell from 171 thousand in 1931 to 139 thousand in 1933; but number of wage-earners fell only from 6,163 to 5,788 thousand, thus bringing up the average of wage-earners per factory. It is quite possible that in 1935 the American (and British) factories which remained were from the *trend* point of view cyclically over-sized in operatives, not, as Professor Jewkes assumes, under-sized, and that the upward trend in persons per establishment 1935–47 may have been greater, not less, than appears superficially. Incidentally, a more meaningful measure of size than the crude arithmetic average discussed hitherto is the median—the size of factory above and below which an equal number of persons are employed. In my *Logic of British and American Industry* (p. 34) I give the 1935 median size in the United Kingdom as 235 persons per establishment of all sizes. A similar calculation, based on the 1949 Census of Production (*Summary Tables*, p. 33) makes the median number of persons as high as 295.

I hope I shall not be accused of neglecting the formidable forces that tend to variegate the sizes of factory and to keep the average down, instances of which Professor Jewkes and many other economists are fond of putting forward. What I am anxious to point out is that *in spite of* the strength of those forces, the existence of which I do not deny, average size of factory is in fact slowly creeping up almost everywhere. The overall balance of forces seems in favour of growth in size, and it is an explanation of this actual trend that economists should seek, rather than attempt to find reasons for what is not really happening. Throughout this note I have been discussing technical units—plants or factories, not firms—so that familiar theories of large-scale economies in marketing and finance, or of the strategies of monopoly, are not too relevant. The still more familiar theory we are left with is that of the increased cost of larger-scale management, but whatever strength this theory has tells against the trend which the facts would seem to establish. Should not the assumed strength of familiar theories be re-examined, and others perhaps given more weight?

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CURRENT TOPICS

THE Annual Meeting of the Royal Economic Society was held at the London School of Economics on Thursday, June 24, 1954. Professor Lionel Robbins was elected to the office of President in succession to Lord Brand. Mr. A. D. Marris was elected Treasurer in succession to Mr. H. C. B. Mynors, who had resigned the office on his appointment as Deputy-Governor of the Bank of England.

THE Secretary reported on the membership and finances as follows :

	1953.	1952.	1939.	1914.
New Fellows and Library Members elected	543	404	490	50
Fellows lost by death, resignation or default	289	309	496	33
Number of Fellows and Library Members on December 31	6286	6032	4572	694
Total Compounders included in above total	2118	2091	1155	159
Surplus or Deficit of Income over Expenditure, together with receipts from Compounders	−£247	−£270	£329	£278

AFTER the conclusion of the formal business there was a discussion of " The Problems of the Social Services." It was opened by Lord Beveridge, who had lately returned from the United States and emphasised the remarkable growth and widespread acceptance of social services of certain kinds in that country. He was glad that the British social services were being thoroughly investigated by the Guillebaud and Phillips Committees and by the Government Actuary. He was convinced that the right basis for them was insurance. He was concerned at the inadequacy of rates of benefit now provided and the increasing number of pensioners who had to have recourse to public assistance. But he was most anxious that the state services should be a minimum-subsistence basis, to which individuals would add by their own efforts.

Mr. Colin Clark argued that expenditure on the social services was involving the nation both in much too high a level of taxation and in a centralisation of administration and a control of it by Parliament and the Civil Service which was in his view very undesirable. He was anxious to see a reversal of present trends and the administration of services wherever possible by non-governmental bodies. He was pessimistic about the increase of

national income, and feared that all the increase would be absorbed in raising services and none be available to reward extra effort.

Mr. A. T. Peacock compared the national expenditure in some of the social fields with that before the war, and showed that the increase, though considerable, was not wholly disproportionate to the growth of national income. He attempted a forecast of the level of expenditure at 1982. He predicted appreciable increases of expenditure on health, on the basis of present standards, but no very considerable increase on education and a decline of expenditure on housing after some ten years of further building at present rates. If national income continued to grow at 1½% per annum he did not think that the social services would confront us with grave problems. These would be the consequence, rather, of increases of standards above those now prevailing.

Mr. S. P. Chambers disagreed with a suggestion of Mr. Clark that the state could divest itself of responsibility for certain minimum standards. He argued that the state had long accepted this responsibility, and a democratic country could not go back on it. He suggested, however, that the finance of social services derived from compulsory contributions, which were in effect taxation, and that the ordinary criteria of equity required that the expenditure should be met from general taxation on a proportional or progressive basis rather than from a regressive tax.

In the subsequent discussion Professor Titmuss emphasised the immense importance both in the United States and in the United Kingdom of voluntary pension schemes, which were growing very fast, were now much more important than the state scheme and which disposed of very large investible funds.

AMONG the awards for research announced by the Leverhulme Trustees is the following :

Fellowship: J. C. R. Dow, Senior Economic Adviser, H.M. Treasury, for the study of the behaviour of the British economy, 1945–54.

Houblon-Norman Fund. The Trustees of the Houblon-Norman Fund, on the recommendation of their Advisory Committee, have made the following awards for 1954–55 :

Fellowship

Mrs. A. M. Millard, Lecturer, Battersea Training College. — London's Imports 1600–1640.

Research Grants

Mr. G. Clayton, Lecturer, University of Liverpool.	The Present Organisation and Structure of the Swedish Banking System.
Mr. R. E. George, Statistical and Administrative Assistant, South Western Gas Board.	Economic Policy in the Gas Industry before Nationalisation.
Mr. N. J. Gibson, Research Student, The Queen's University of Belfast.	Banking in Ireland.
Mr. D. M. Joslin, Fellow of Pembroke College, Cambridge.	Eighteenth Century London Banking 1720–1826.
Miss S. M. Knight, Research Assistant.	The Structure and Problems of Banking in Belgium.
Miss D. M. Knox, History Mistress, Ursuline Convent, Brentwood.	London Brewing Trade 1830–1914.
Mr. R. V. Lennard, Historian. (Renewal.)	Rural England in the Feudal Age.
Mr. F. J. Parker, Midland Bank, Ltd.	Banking in Hertfordshire.
Professor J. H. B. Tew, Professor of Economics, Nottingham University.	Institutional Finance of British Industry.
Mr. L. Wilks, Chase National Bank of the City of New York.	Economic Consequences of the Growth of Pension Schemes and Superannuation Funds.
Mr. T. Wilson, Fellow of University College, Oxford. (Renewal.)	Economic Fluctuations in the United Kingdom between 1923 and 1938.

An offer of awards for 1955–56 will be made in due course. Further information may be obtained from the Secretary, Houblon-Norman Fund, c/o Bank of England, London, E.C.2.

THE following have compounded for life fellowship of the Royal Economic Society :

Chhotabhai, P. M.	Hollinshead, E.	Ruparell, R. H.
Corea, G.	Li, S. Y.	Segal, H. H.
De Pous, Dr. J. W.	Parkinson, J. R.	Talwar, O.
Everett, S. J.	Ruparell, B. N.	

The following have been admitted to fellowship of the Society :

Abai, N. A.	Baragwanath, L. E.	Ch'ing-hsi, W.
Abbott, G. F.	Bau, J. J. W.	Chopra, N. T. S.
Abidi, J.	Bhatnagar, M. P.	Clifton, M.
Adelekun, A. O.	Bowland, G.	Coney, N. M.
Agbim, N.	Brockley, F. N.	Cooper, J. J.
Ali, M. G.	Brown, R. C.	Creswell, C. E.
Andrews, M. C.	Burnett, C.	Cuffe, W. E.
Armstrong, W. E.	Chan, K. K.	Darko, W. A.
Aubrey, H. G.	Chaturvedi, A. P.	Davidson, J. C.
Bailey, I.	Cheng, Y. S.	Davison, R. B.

Dayamani, M.
Delacour, A. W.
Deshpande, Prof. N. M.
Donaldson, Mrs. A.
Doox, J.
Drummond, S. H.
Dunn, F. M.
Egan, Mrs. L. C. B.
Ehara, Prof. M.
Egras, I. H.
Falck, M. A. de R.
Fink, D. A.
Firth, G. C.
Freer, E. R.
Frost, J. J.
Galbraith, J. P. R.
Gaskin, M.
Gbadamosi-Otiti, A. O.
Grasberg, E.
Grayevsky, S.
Greatrix, S. C.
Griggs, R. L.
Groome, H. S.
Gross, B. M.
Groves, K. W.
Haasbroek, M. S.
Hallikeri, R. K.
Hamid, Z. A.
Hardman, D. J.
Hare, L.
Hartle, D. G.
Haselden, J. L.
Hatton, W. J.
Hayward, L. H.
Heap, T.
Hellewell, E.
Hey, L.
Hinchcliffe, A. J.
Hogg, V. W.
Holden, R.
Holliday, F. A.
Hooker, Prof. J. J.
Hsu, T. K.
Husain, S. S.
Ibrahim, M. H.
Ighodalo, J.
Ilahi, N.
Iyer, G. K. R.
Jablanowski, Dr. M. J.
Jackson, E. N. S.
Johnson, G. F.
Jones, I. P.
Jones, L.
Jones, T. O.
Josh, J. L.
Joti, S. C.
Jury, H. L.
Kadoor, S.
Khokhar, M. H.
King, E. B.
King, J. C.
Klein, T. M.
Koppman, D.
Kreukniet, Prof. R. B.
Krishnamurti, M. S.
Lambert, F.
Leddy, F. N.
Lee, S. Y.
Lennard, A. R.
Leong, C. S.
Loh, C. L.
Longhurst, P. G.
Longworth, W. W.
MacWinkle, N. C.
Madubuko, A. B. C.
Main, W.
Malaher, W. G.
Marsden, B.
Martins, Prof. C. M.
Matthews, I.
Mattock, M.
Meaney, P. M.
Measures, F. E.
Mendy, P. L.
Menz, W. J.
Mills, F. D.
Mitchell, T.
Nedivi, U. I.
Niamatullah, Md.
Nixon, E. H.
Nti, A. K.
Ogbalu, F. C.
O'Malley, T. A.
Palmer, G. F. D.
Pandian, S. R.
Parsons, D. J.
Pasco, C.
Patel, H. M.
Patel, V. A.
Pepinster, J. D. A.
Phillips, A.
Pillai, A. N.
Polanski, A. N.
Prabhu, B. S.
Ramamurthy, S.
Rathinam, C.
Richardson, R. W.
Robinson, G. E.
Rothbard, M. N.
Routh, Dr. G.
Rugina, Prof. A. N.
Russell, E. W.
Russell, J. S.
Samuel, A. C.
Sastry, S. N.
Serafy, S. E. D.
Shawkat, S. S.
Sheth, S. K.
Shrewsbury, M. B.
Simpson, C. M.
Singh, M.
Sivaswamy, P. S.
Slasor, G.
Smith, B.
Smith, J. D.
Speller, A. K.

Stankiewicz, W. J.	Taylor, Dr. H. J.	Van Zeyl, L.
Stocker, G. G. L.	Telang, K. M.	Walsh, P.
Swe, M.	Thacker, L. J.	Weld, E. A. Jr.
Tan, C. K.	Thomas, P. A. G.	Wolfe, J. N.
Tan, S. C.	Turner, E.	Yeap, S. K.

The following have been admitted to Library membership of the Society :

Administrative Staff College, Henley-on-Thames.
Bolton Training College.
Cembureau, Malmo.
Idaho State College
Oficina de Estudios Economicos, Madrid.

THE Secretary regrets to announce that, owing to an unexpected increase in the cost of producing this volume, it has been neccessary to raise the price of Volume III of *Jeremy Bentham's Economic Writings* to 30*s*.

RECENT PERIODICALS AND NEW BOOKS

Journal of the Royal Statistical Society

VOL. 117, PART I, 1954. *Statistics of Statutory Marketing in West Africa, 1939–51 :* P. T. BAUER. *An Essay on the Mathematical Theory of Freedom :* D. and A. GABOR. *Length of Life of Musicians :* M. DA S. RODRIGUES. *International Statistical Institute, 28th Session, Rome 1953. Regional Economic Statistics :* K. S. LOMAX.

Economica

VOL. XXI, NO. 82, MAY 1954. *The Colombo Plan :* F. BENHAM. *Dichotomies of the Pricing Process in Economic Theory :* D. PATINKIN. *The Lancashire Bill System and its Liverpool Protagonists, 1810–1827 :* S. G. CHECKLAND. *The Historist Reaction in English Political Economy, 1870–1890 :* A. W. COATS. *Robbins on Robertson on Utility :* J. R. HICKS.

Oxford Economic Papers

VOL. 6, NO. 2, JUNE 1954. *Variations in the Rate of Economic Growth in the U.S.A., 1869–1939 :* B. WEBER and S. J. HANDFIELD-JONES. *An Interpretation of Economic Backwardness :* H. MYINT. *Reconsideration of a Group Welfare Index : A Rejoinder on Marginal Preference :* J. ROTHENBERG. *The Macmillan Gap 1931–53 :* R. FROST.

Bulletin of the Oxford University Institute of Statistics

VOL. 16, NO. 2–3, FEBRUARY & MARCH 1954. *Earnings in the Boot and Shoe Industry :* K. G. J. C. KNOWLES and M. VERRY. *The Reform of E.P.U. :* J. R. SARGENT. *East–West Trade :* A. MADDISON.

The Journal of Industrial Economics

VOL. II, NO. 2, APRIL 1954. *A Note on Stocks :* SIR HENRY CLAY. *Early Days in Schumania :* J. DRISCOLL. *Organization and Efficiency of the House-Building Industry in England and Wales :* P. A. STONE and W. J. REINERS. *Track Costs and Motor Taxation :* A. A. WALTERS. *The Effects of Requirements Contracts on Competition :* G. SHILLINGLAW.

The Manchester School of Economic and Social Studies

VOL. XXII, NO. 2, MAY 1954. *The Rate of Interest—British Opinion in the Eighteenth Century :* J. M. LOW. *Economic Development with Unlimited Supplies of Labour :* W. A. LEWIS. *Labour and the Development of the Public Corporation :* G. N. OSTERGAARD.

Economic History Review

VOL. VI, NO. 3, APRIL 1954. *Industrial Growth in the Middle Ages : The Cloth Industry in Flanders :* H. VAN WERVEKE. *Prices, Wages and Popular Movements in Paris during the French Revolution :* G. E. RUDÉ. *Blackwell Hall Factors, 1795–1799 :* C. GILL. *The Sheepfold in Wiltshire and the Floating of the Watermeadows :* E. KERRIDGE. *Some Influences Affecting the Development of Sanitary Legislation in England :* B. KEITH-LUCAS.

The British Journal of Sociology

VOL. V, NO. 2, JUNE 1954. *The Incest Taboo in Relation to Social Structure and the Socialization of the Child :* TALCOTT PARSONS. *Notes on Comparative Economics :* F. STEINER. *Measuring Poverty :* P. TOWNSEND.

Palæolithic Religion and the Principle of Social Evolution : F. D. KLINGENDER. *Prestige Ranking of Occupations in an American City with Reference to Hall's and Jones' Study :* J. B. MONTAGUE and B. PUSTILNIK. *The Employment of Sociologists :* J. A. BANKS.

The Sociological Review

VOL. XLIV, SECTION 6, 1952. *Is There a National Neurosis ? :* M. MACKENZIE.

VOL. XLIV, SECTION 7, 1952. *Physical Principles in Human Co-operation :* V. DANIEL.

International Affairs

VOL. XXX, NO. 2, APRIL 1954. *The Problem of Convertibility for Western Europe :* P. JACOBSSON. *France's Political and Economic Problems :* A. PINAY. *Yugoslavia on her Way towards a Socialist Democracy :* V. VELEBIT. *Canadian Nationalism : an historical approach :* G. W. BROWN. *The International Civil Service : basic problems and contemporary difficulties :* F. HONIG. *The End of Empire : another view :* K. ROBINSON.

VOL. XXX, NO. 3, JULY 1954. *The Shaikhdom of Kuwait :* E. MONROE. *Scandinavian Co-operation in International Affairs :* H. LANGE. *Western Enterprise in the Far East :* G. C. ALLEN. *The Conflict of Culture in Africa :* P. ABRAHAMS. *Korea—the Next Stage :* SIR A. RUCKER. *Sudanese Self-Government :* P. B. BROADBENT. *Government and Politics in Puerto Rico :* J. DE GALINDEZ. *General International Law and the United Nations Charter :* A. VERDROSS.

The Political Quarterly

VOL. XXV, NO. 3, JULY–SEPTEMBER 1954. *Notes and Comments : the Future of the Labour Party. What Prospect for the Labour Party ? :* D. CHAPMAN. *America and Russia :* E. WRIGHT. *The European Inheritance :* N. ANNAN. *The Kashmir Deadlock :* C. H. ALEXANDROWICZ. *Local Government : Reorganisation or Reform :* H. MADDICK. *Constitutional Reform in France :* B. MIRKINE-GUETZÉVITCH.

Soviet Studies

VOL. VI, NO. 1, JULY 1954. *Soviet Housing : Some Town Planning Problems :* A. BLOCK. *The Amalgamation of Collective Farms : Some Technical Aspects :* R. E. F. SMITH. *Soviet Law and Soviet Society :* R. SCHLESINGER. *The U.S.S.R. after the Death of Stalin :* A. NOVE.

Accounting Research

VOL. 5, NO. 2, APRIL 1954. *Some Problems of Inter-Plant Cost Comparisons:* W. F. LUTTRELL. *Contemporary Concepts of Business Net Income—the Shares of Capital and Labour, and the Influence of Public Opinion :* J. D. EDWARDS. *Accounting Dynamics :* F. SEWELL BRAY. *Facts about Direct Costing for Profit Determination :* G. AMERMAN. *Estate Duty and Private Companies :* A. R. ILERSIC.

The Incorporated Statistician

VOL. 5, NO. 1, MARCH 1954. *National Income Statistics : Are they Accurate or Useful ? :* C. T. SAUNDERS. *Social Class in Sample Surveys :* J. S. DOWNHAM. *Difficulties and Dangers in Statistics in Industry :* C. D. HUGHES.

The Banker

VOL. CII, NO. 340, MAY 1954. *Tax Relief : the Long-run Prospect. Economy Set Fair ? Hope for No Par Value ? :* H. WINCOTT. *Is Gold Staging a Come-back ? South Africa and the London Gold Market :* C. G. TETHER. *Will America Ease its Gold Regulations ? :* H. BRATTER. *Financing Private Building :* O. R. HOBSON. *Credit Expansion in Scotland :* F. S. TAYLOR. *A Hundred Years of the Chartered :* G. TYSON.

VOL. CII, NO. 341, JUNE 1954. *Bank Rate and Foreign Funds. Last Year of E.P.U.? Tackling Europe's Export Subsidies. The Economics of Dependency:* L. T. LITTLE. *Switzerland's Surplus of Capital. The Long-term Gap in Raw Material Supply:* E. H. STERN. *The Inimitable Bank-note:* M. WEEKLEY.

The Bankers' Magazine

NO. 1322, MAY 1954. *The Retiring Editor. Economic and Financial Resources Budgeting:* H. C. HILLMANN. *Balance of Payments 1953–1954. Sterling Redivivus:* H. E. EVITT. *Banking in Ethiopia.*

NO. 1323, JUNE 1954. *A Credit Experiment. Bank Rate and the Modernisation of Industry:* G. L. S. SHACKLE. *A Check in Trustee Expansion? The Pursuit of Debtors:* D. G. ANTONIO. *Recent Legal Decisions of Interest to Bankers.*

Barclays Bank Review

VOL. XXIX, NO. 2, MAY 1954. *The Schuman Plan Today. Colonial Sterling Balances. The Canadian Seaway Project.*

District Bank Review

NO. 110, JUNE 1954. *Cotton Today:* W. G. PILKINGTON. *Newer British Industries and Increasing Productivity:* J. H. DUNNING. *The Battle for £6,000 millions.*

National Provincial Bank Review

NO. 26, MAY 1954. *Trade Unions and National Prosperity:* T. O'BRIEN. *Post-war Economic Developments in Belgium:* L. CAMU.

The Three Banks Review

NO. 22, JUNE 1954. *Canada—a Lost Opportunity?:* H. G. JOHNSON. *The London Bankers' Clearing House. London Agent.*

Westminster Bank Review

MAY 1954. *What Sort of Exchange Rates?:* W. M. SCAMMELL. *Problems of Commonwealth Economic Development:* J. S. G. WILSON. *Room for Manœuvre. Initial Difficulties. The Taxpayers' Gamble on the Agricultural Market:* H. FRANKEL.

Journal of the Institute of Transport

VOL. 25, NO. 10, MAY 1954. *Continental Traffic—a Look Forward:* L. H. K. NEIL. *Economic Aspects of Modern Air Transport:* M. H. CURTIS. *The Work of the Railway Inspectorate:* C. A. LANGLEY. *Transport Co-ordination in Switzerland:* F. H. CONWAY.

Planning

VOL. XX, NO. 362, APRIL 1954. *World Population and Resources.*
VOL. XX, NO. 363, MAY 1954. *Private Capital for Under-developed Areas.*
VOL. XX, NO. 364, MAY 1954. *Providing for Pensions.*
VOL. XX, NO. 365, MAY 1954. *Graduate Wives' Tales.*

Town and Country Planning

VOL. XXIII, NO. 121, MAY 1954. *Slums, Redevelopment and Planning. The 1954 Planning Bill:* D. HEAP. *The New Bill Debated. Planning in the Gold Coast:* A. E. S. ALCOCK. *Changing Living Habits. Shopping Centres: Some Factors in Design: I:* W. BURNS. *Problems of Rural Wales: I:* A. E. TELLING. *Who Should Plan the Parishes?:* A. B. HUDSON. *Reconstruction of Stalingrad:* N. CHUMAKOV.

VOL. XXIII, NO. 122, JUNE 1954. *Skyscraper Housing :* F. J. OSBORN. *The Exmoor National Park :* J. D. U. WARD. *Planning in East Africa :* H. KENDALL. *A "Broad-Acre" Project :* P. J. HENKEN. *Problems of Rural Wales : II :* A. E. TELLING. *Social Contracts :* W. G. S. CROOK. *Shopping Centres : Some Factors in Design : II :* W. BURNS.

VOL. XXIII, NO. 123, JULY 1954. *The Waste of National Capital :* F. J. OSBORN. *The Dales National Park :* R. H. WADE. *Land for the Railways :* G. D. M. BLOCK. *Park Forest, Illinois :* C. F. SWEET. *Electricity in Country Areas :* C. T. MELLING. *Coal and Planning :* N. PEARSON. *A French View of American Planning :* M. OSBORN. *Budapest to be Remodelled :* L. KIRWAIN. *Heavy Timber :* J. D. U. WARD.

Cartel

VOL. 4, NO. 2, APRIL 1954. *The Future of Resale Price Maintenance :* C. A. R. CROSLAND. *The German Restraint of Competition Bill :* T. KUHR. *Cartel Regulation—the Dutch Middle Way :* J. F. VAN NETTEN.

Progress

VOL. 43, NO. 242, SPRING 1954. *The Part Business has played in the Development of Modern Africa :* LORD MILVERTON. *The Financing of the Recovery of West Germany's Economy :* K. BLESSING. *The Baltic Exchange :* N. DAVENPORT. *James Spedding, Colonial Administrator and Scholar :* SIR ARNOLD PLANT. *The New Towns have their Problems :* N. TWEDDELL. *Fourteen Years without a Name :* C. J. VAN DEN BERGH.

Hard Fibres

NO. 12, MARCH 1954. *World Fibre Position—Forecast for 1954. World Situation. Hard Fibre Balance in 1954. Self-Generating or Self-Correcting ?*

The Canadian Journal of Economics and Political Science

VOL. 20, NO. 2, MAY 1954. *Labour Problems of an Expanding Economy :* S. JAMIESON. *A Revised Classification of Forms of Competition :* C. M. BIRCH. *The British Election of 1874 :* H. W. MCCREADY. *Anarchism and Individual Terrorism :* D. NOVAK. *Plato and Popper :* G. P. GRANT. *British Monopoly Legislation in Practice :* P. H. GUÉNAULT and J. M. JACKSON. *Canadian Post-War Monetary Policy, 1946–52 :* R. C. MCIVOR and J. H. PANABAKER.

The South African Journal of Economics

VOL. 22, NO. 1, MARCH 1954. *Special Coming of Age Issue—21 Years in Retrospect.*

The Indian Economic Review

VOL. II, NO. 1, FEBRUARY 1954. *Monopsony and the Consumer Interest :* M. BRONFENBRENNER. *Recent Trends in the Managerial, Administrative and Financial Integration of Industrial Enterprises in India :* M. M. MEHTA. *Foundation Day Address :* J. MATTHAI. *Japanese Terms of Trade, 1921–34 :* V. K. RAMASWAMI. *Industrial Awards in India :* B. N. DATAR and S. MONGIA.

Tata Quarterly

VOL. IX, NO. 2, APRIL 1954. *The Reorganization of States. Economic and Financial Review, January–March 1954.*

International Labour Review

VOL. LXIX, NO. 3, MARCH 1954. *Conditions of Employment in International Civil Aviation :* J. SCHENKMAN. *Juvenile Employment in Latin America :* A. TARRE MURZI. *The Management of Economic Undertakings by the Workers in Yugoslavia :* R. UVALIĆ.

VOL. LXIX, NO. 4, APRIL 1954. *The Protection of Employees on the Termination of Contracts of Employment :* E. HERZ. *Investment, Welfare and Employment :* A. SAUVY. *Women Workers and Home Responsibilities :* M. BAERS. *The Weekly Rest of Shop Assistants in France :* J. DE BONNAFOS.

VOL. LXIX, NO. 5, MAY 1954. *The Asian Regional Conference. Cultural Factors in Economic and Social Change :* E. BEAGLEHOLE. *Wages in Burma :* J. H. RICHARDSON. *Rural Development in India :* S. S. DYAMI.

International Financial Statistics

VOL. VII, NO. 4, APRIL 1954. *Changes in Money Supply.*

VOL. VII, NO. 5, MAY 1954. *Gold and Foreign Exchange in 1953. Balance of Payments of the United Kingdom, 1950–53.*

VOL. VII, NO. 6, JUNE 1954. *Real Prices of Major World Trade Commodities.*

United Nations Economic Bulletin for Europe

VOL. 6, NO. 1, FOURTH QUARTER 1953. *Europe's Trade in Agricultural Products.*

Public Finance

VOL. IX, NO. 1, 1954. *Finance and the Business Cycle :* H. GUITTON. *Valuations of Property for Taxation :* C. LOWELL HARRISS. *Belgian Post-war Budgetary and Financial Policy :* M. H. D'HAEZE. *Public Finance of Hawaii :* R. KAMINS. *The Tax System of the Byzantines :* J. ZERVAS.

Kyklos

VOL. VI, NO. 4, 1954. *Ideas—Their Migration in Space and Transmittal over Time :* F. REDLICH. *Gesamtwirtschaftliche Abstimmungsprobleme im Zusammenhang mit der Kapitalbildung :* H. HALLER. *Inter-ethnic Tensions and Their Mediation : a Strategy for a Research Campaign :* A. R. GILBERT. *Note sur l'orientation des économies agricoles :* T. MUNK. *Economic Planning for Peace :* G. U. PAPI.

Economia Internazionale

VOL. VII, NO. 1, FEBRUARY 1954. *A Geometrical Demonstration of Stability Conditions in International Trade :* A. C. L. DAY. *Domestic Production and Foreign Trade ; the American Capital Position Re-examined :* W. LEONTIEF. *A New Look at the Dollar Problem and the U.S. Balance of Payments :* R. NURKSE. *Some Considerations of Triangular Trade as Influenced by Retention Quota Arrangements (Part I) :* U. SACCHETTI. *Elasticity Optimism and Pessimism in International Trade :* P. STREETEN.

The American Economic Review

VOL. XLIV, NO. 1, MARCH 1954. *Institutional and Theoretical Implications of Economic Change :* C. B. HOOVER. *Economies of Scale, Concentration and Entry :* J. S. BAIN. *Economic Preconceptions and the Farm Policy :* J. K. GALBRAITH. *Some Questions about Growth Economics :* L. B. YEAGER. *The Dynamics of Investment :* R. W. CLOWER. *Price and Output Determination : Related Products :* M. J. BAILEY. *Exchange Flexibility and the Stability of Sterling :* S. I. KATZ. *What Every Economist should Know about Health and Medicine :* E. GINZBERG.

VOL. XLIV, NO. 2, MAY 1954. *Papers and Proceedings of the Sixty-sixth Annual Meeting of the American Economic Association.*

VOL. XLIV, NO. 3, JUNE 1954. *Recent Changes in Income Inequality :* R. J. LAMPMAN. *The Price Level in Macroeconomic Models :* L. HOUGH. *Excise Taxes : Capitalization-Investment Aspects :* J. A. STOCKFISCH. *The Growth of American Unions :* I. BERNSTEIN. *The Trade Agreements Escape Clause :* I. B. KRAVIS. *Soviet Bloc Currency Conversions :* E. AMES. *Man-power Allocation under British Planning :* S. E. ROLFE. *Economic Effects of French Minimum Wage Law :* H. C. EASTMAN.

The Annals of the American Academy of Political and Social Science

VOL. 292, MARCH 1954. *Bureaucracy and Democratic Government.*
VOL. 293, MAY 1954. *Prisons in Transformation.*

The Quarterly Journal of Economics

VOL. LXVIII, NO. 2, MAY 1954. *Recent Developments in Economics :* F. ZEUTHEN. *Thoughts on Meeting some Important Persons :* SIR DENNIS ROBERTSON. *The Balanced Budget :* J. BURKHEAD. *Some Economic Aspects of Fissionable Material :* S. ENKE. *On the Concept of Social Welfare :* A. BERGSON. *Critical Notes on the Acceleration Principle :* H. NEISSER. *Adam Smith and the Human Stomach :* J. S. DAVIS. *The Shoe Machinery Case and the Problem of the Good Trust :* L. S. KEYES. *Location Theory and Trade Theory : A Short-Run Analysis :* W. ISARD.

The Journal of Political Economy

VOL. LXII, NO. 2, APRIL 1954. *The Early History of Empirical Studies of Consumer Behavior :* G. J. STIGLER. *Social Choice, Democracy, and Free Markets :* J. M. BUCHANAN. *The Economic Theory of a Common-Property Resource : the Fishery :* H. SCOTT GORDON. *Two Concepts of External Economies :* T. SCITOVSKY. *The Profit Concept and Theory : a Restatement :* J. F. WESTON.

VOL. LXII, NO. 3, JUNE 1954. *The Malenkov-Khrushchev New Economic Policy :* L. VOLIN. *The Economics of Marketing Reform :* P. T. BAUER and B. S. YAMEY. *Hyperinflation in China, 1937–49 :* C. D. CAMPBELL and G. C. TULLOCK. *Business Cycles and Economic Policy :* H. BREMS. *The Marshallian Demand Curve :* M. J. BAILEY; *A Reply :* MILTON FRIEDMAN.

Econometrica

VOL. 22, NO. 2, APRIL 1954. *Report of the Evaluative Committee for Econometrica. On Equilibrium in Graham's Model of World Trade and other Competitive Systems :* L. MCKENZIE. *Causality and Econometrics :* H. O. A. WOLD. *Standard Error of Forecast of a Complete Econometric Model :* T. M. BROWN. *A Model for Programming and Sensitivity Analysis in an Integrated Oil Company :* A. CHARNES, W. W. COOPER and B. MELLON. *An Example of Autocorrelated Disturbances in Linear Regression :* J. GURLAND. *Autoregression in the United States Economy—1870–1929 :* A. J. GARTAGANIS. *An Inventory Problem :* M. ROSENBLATT.

Journal of the American Statistical Association

VOL. 49, NO. 265, MARCH 1954. *The Present Structure of the Association :* W. G. COCHRAN. *Principles of Sampling :* W. G. COCHRAN, F. MOSTELLER and J. W. TUKEY. *Do Persons Lost to Long Term Observation Have the Same Experience as Persons Observed ? :* J. F. DONOHUE, V. LARSEN, A. P. ISKRANT and Q. R. REMEIN. *Applications of Statistical Methods to Sedimentary Rocks :* W. C. KRUMBEIN. *Relationship between and Index of House Prices and Building Costs :* D. M. BLANK. *Cycles in the Balance of Payments :* S. FABRICANT. *Demand Analysis :* H. S. HOUTHAKKER. *Some Practical Techniques in Serial Number Analysis :* L. A. GOODMAN. *The Problem of Autocorrelation in Regression Analysis :* R. L. ANDERSON. *Joint Confidence Regions for Multiple Regression Coefficients :* D. DURAND. *Asymptotic Relative Efficiencies of Distribution-Free Tests of Randomness against Normal Alternatives :* A. STUART. *Estimation of the Poisson Parameter from Truncated Samples and from Censored Samples :* A. C. COHEN. *Tables of the Expected Value of* 1/X *for Positive Bernoulli and Poisson Variables :* E. L. GRAB and I. R. SAVAGE.

The Journal of Economic History

VOL. XIV, NO. 1, WINTER 1954. *Intercompany Technical Standardization in the Early American Automobile Industry :* G. V. THOMPSON. *Philippe de Girard and the Introduction of Mechanical Flax Spinning in Austria :* D. C. LONG. *Speculation in the Revolutionary Debt : The Ownership of Public Securities in Maryland, 1790 :* E. J. FERGUSON.

VOL. XIV, NO. 2, SPRING 1954. *Geographical Differences in the Use of the Corporation in American Manufacturing in 1899 :* G. H. EVANS. *Reform Unionism : The National Labour Union :* G. N. GROB.

Industrial and Labor Relations Review

VOL. 7, NO. 3, APRIL 1954. *Seizure in Emergency Labor Disputes in Virginia :* R. R. FRANCE. *Two Views on Wage Differences : Intraoccupational Wage Diversity :* M. ROTHBAUM and H. G. ROSS. *Hiring Patterns and Occupational Wage Dispensation :* R. L. RAIMON. *Administrative Problems of the Wage Stabilization Board :* M. A. HOROWITZ. *Union Political Action : The Member Speaks :* R. A. HUDSON and H. ROSEN. *Community Recognition of Union Leaders :* O. W. PHELPS. *The Stockholm Congress of the ICFTU :* J. P. WINDMULLER. *Money Wage and Product Wage Relationships :* P. E. SULTAN.

The Southern Economic Journal

VOL. XX, NO. 4, APRIL 1954. *Industrialization and Economic Progress in the Southeast :* S. H. ROBOCK. *The Farmer's Stake in Our Foreign Economic Policy :* R. W. TRENTON. *Issues in Congressional Tariff Debates, 1890–1930 :* W. R. ALLEN. *Commercial Aviation and the Civil Aeronautics Act of 1938 :* H. C. BUNKE. *Cross Hauling—a Symptom of Incomplete Collusion under Basing-Point Systems :* J. S. MCGEE.

Harvard Business Review

VOL. 32, NO. 2, MARCH–APRIL 1954. *The Defense of Business : a Strategic Appraisal :* J. K. GALBRAITH. *In Conference :* R. F. BALES. *Land for Industry—a Neglected Problem :* D. A. MUNCY. *Aiding the Community :* C. R. WHARTON. *Resistance to Training :* J. R. SURFACE. *Fact and Fiction about Southern Labor :* S. H. ROBOCK and J. M. PETERSON. *Control and Freedom in a Decentralized Company :* R. VILLERS. *Electronics Down to Earth :* J. A. HIGGINS and J. S. GLICKAUF. *Train your Memory :* B. FURST. *Business Appraises Consumer Testing Agencies :* E. R. BEEM and J. S. EWING. *New Approach to Executive Selection :* A. S. JUDSON.

VOL. 32, NO. 3, MAY–JUNE 1954. *Thinking Ahead : Business and Government :* J. W. ALSOP. *Challenge of the Guaranteed Annual Wage :* J. L. ALLEN and C. W. RANDLE. *How to Deal with Resistance to Change :* P. R. LAWRENCE. *The Budget Comes of Age :* J. L. PEIRCE. *Let's Get Cost Pricing Out of Our Laws :* R. W. AUSTIN. *Mathematical Programming : Better Information for Better Decision Making :* A. HENDERSON and R. SCHLAIFER. *How Much Should a Company Spend on Research ? :* H. S. TURNER. *Door-to-Door Selling :* V. P. BUELL. *Evaluating the Proposed Labor-Law Changes :* A. H. MYERS.

Foreign Affairs

VOL. 32, NO. 3, APRIL 1954. *Policy for Security and Peace :* J. FOSTER DULLES. *France and the Defense of Europe :* G. MOLLET. *Rise and Fall of the Anglo-French Entente :* A. GERAUD. *The Pivot of History :* C. KRUSZEWSKI. *The Case for Private Investment Abroad :* H. E. STASSEN. *Oil for Peace or War :* H. FEIS. *The Progress of Soviet Science :* J. TURKEVICH. *Democracy Lives in Italy :* R. PACCIARDI. *The New Reign in Saudi Arabia :* H. ST. J. B. PHILBY. *The Tariff in Transition :* P. W. BIDWELL. *Bolivia : Test of Technical Assistance :* C. GOODRICH. *Danger in Kashmir :* J. KORBEL. *The Soviet Grip on Sinkiang :* LI CHANG.

VOL. 32, NO. 4, JULY 1954. *Leadership in World Affairs :* W. A. HARRIMAN. *Puerto Rico and the U.S., their Future Together :* L. M. MARIN. *Violence on the Jordan–Israel Border : a Jordanian View :* J. B. GLUBB. *The Search for Anglo-American Policy :* H. GAITSKELL. *Japan Tackles Her Problems :* J. D. ROCKEFELLER. *The Split between Asian and Western Socialism :* D. J. SAPOSS. *The Political Vacuum in Germany :* K. JASPERS. *The Gold Coast : an Experiment in Partnership :* B. W. JACKSON. *Turkey Joins the West :* G. C. MCCHEE. *Canadians are Different :* M. CHAPIN. *The Residue of Pareto :* C. BRINTON. *Finland Stands Guard :* J. H. WUORINEN. *Antarctic Claims :* J. W. HERON.

Social Research

VOL. 21, NO. 1, SPRING 1954. *Essentials to Peace :* G. MARSHALL. *Soviet Economic Growth :* N. JASNY. *Mill and the Problem of Freedom of Thought :* H. M. MAGID. *Impressions from Berlin, 1953 :* E. J. GUMBEL. *Stability in Late Capitalism : a Survey :* H. NEISSER.

Review of Social Economy

VOL. XII, NO. 1, MARCH 1954. *The Principle of Personal Responsibility :* K. E. BOULDING. *Some Reflections on the Economic Aspects of "Depersonalization" :* F. BAERWALD. *The Worker as Person :* B. W. DEMPSEY. *The Responsibility of Man the Investor :* J. H. PRIME. *The Manager as a Person :* J. L. HAYES. *Economic Progress Under the United Nations :* SISTER M. THOMASINE.

Journal of Farm Economics

VOL. XXXVI, NO. 2, MAY 1954. *Problems of a Farm and Home Planning Program :* D. D. BROWN. *Farm Planning—a Trial Operation :* R. G. WHEELER and J. D. BLACK. *The Republican Department of Agriculture :* C. M. HARDIN. *Sources of our Increasing Food Supply :* H. F. BREIMYER. *Resource Return and Productivity Coefficients :* E. O. HEADY and R. SHAW. *Underemployment of Labor in Southeastern Agriculture :* C. E. BISHOP. *Flexibility and Diversification in Western Kansas :* E. N. CASTLE. *Comparison of Farm Management Service Farms and a Random Sample :* A. G. MUELLER. *Resource Productivity and Development Policy in Greece :* G. COUTSOUMARIS.

Economic Geography

VOL. 30, NO. 2, APRIL 1954. *An Approach to a Theory of Economic Geography :* H. H. MCCARTY. *The Hashemite Kingdom of the Jordan : a Study in Economic Geography :* S. VAN VALKENBURG. *Great Lakes–Overseas : An Expanding Trade Route :* H. M. MAYER. *Population Pressure and National Resources : Some Observations upon the Italian Population Problem :* M. J. WISE. *Land Reform in Southern Italy :* R. E. DICKINSON.

Land Economics

VOL. XXX, NO. 2, MAY 1954. *Cost-of-Capital Techniques Employed in Determining the Rate of Return for Public Utilities :* L. W. THATCHER. *The Role of Government in Influencing Changes in Housing in Baltimore :* M. HOFFMAN. *Plantation Agriculture in the United States : Seventeenth to Twentieth Centuries :* P. S. TAYLOR. *Rural Zoning in Minnesota : An Appraisal :* C. H. STOLTENBERG. *Land Reform in Bolivia :* E. FLORES.

The Journal of Accountancy

VOL. 97, NO. 3, MARCH 1954. *Statistical Sampling Applied to Ageing of Accounts Receivable :* R. M. TRUEBLOOD and R. CYERT. *Authoritative Accounting Guide for Nonprofit Institutions :* R. S. JOHNS. *Accounting*

for Time Charges in a Public Accounting Practice : M. R. REICH. *Capital-Gains Apsects of Oil and Gas Transactions :* J. F. Y. STAMBAUGH. *The Auditor's Report on Municipal Revenue Bonds :* W. F. MORGAN. *New Internal Revenue Service Rules for Taxpayers' Rulings :* D. C. ALEXANDER. *The Theory and Practice of Accountants' Workpapers :* S. CHAN. *Internal Control Over Inventories in Manufacturing Concerns :* H. C. MCGUIGAN.

VOL. 97, NO. 4, APRIL 1954. *Standards for Admission to the Accounting Profession :* D. M. BEIGHTS. *Treasurers Define the Nature of Advertising Items :* J. K. LASSER. *The Impact of Changing Prices on a Department Store :* D. A. CORBIN. *Five Practical Problems Solved by Public Accounting Firms. Sale of Rental Housing Units : Ordinary Income or Capital Gain ? :* D. REIFER. *Advisory Service to Business : Its Rewards and Hazards :* A. CHRISTEN. *What Manner of Man is the Average Accountant ? :* R. JACOBS and A. E. TRAXLER.

VOL. 97, NO. 5, MAY 1954. *The Practice of Taxes : One Attorney's Point of View :* C. REMBAR. *Putting Idle Cash to Work to Earn its own Keep :* E. J. MANN. *A Review of the Proposed New Internal Revenue Code :* B. HARROW. *Cost : Is it a Binding Principle of Just a Means to an End ? :* S. J. BROAD. *Organizing and Operating a Successful Internship Program :* B. FUTHEY. *Auditing a Limited Partnership Production in the Theater :* W. BARNETT. *One Firm's Approach to its Administrative Problems :* R. S. BOGUE.

VOL. 97, NO. 6, JUNE 1954. *The Role of the Auditor in Defense-Contract Costs. Confirming Brokers' Accounts with Customers on a Test Basis :* C. H. KNOLL. *A Review of the Proposed New Internal Revenue Code :* B. HARROW. *The Distribution of Overhead with Electronic Calculators :* G. G. JEWETT. *Accounting for Changing Price Levels : Recent British Views :* D. SOLOMONS.

Revue d'Économie Politique

VOL. 64, NO. 2, MARCH–APRIL 1954. *L'Économie de l'Union Française d'Outre-Mer.*

VOL. 64, NO. 3, MAY–JUNE 1954. *Le secret de la prosperité américaine :* W. E. RAPPARD. *Esquisse d'une théorie analytique de l'évolution économique :* J. DAYRE. *Une réformation de la théorie de la concurrence pure :* J. AUBERT-KRIER. *Les physiocrates et le circuit économique :* J. R. BOUDEVILLE.

Revue de Science et de Législation Financières

VOL. XLVI, NO. 2, APRIL–JUNE 1954. *Homage to Gaston Jèze (1869–1953) from Abroad :* E. DA SILVA, C. S. SHOUP, F. NEUMARK, B. GRIZIOTTI. *In Defence of the Tax on Energy :* M. CLUSEAU. *Public Investments in Turkey :* A. ERGINAY. *The Influence of Taxation on Current Savings :* M. LAURÉ. *The Rehabilitation of Indirect Taxation :* M. DUVERGER. *The Interests on the Public Debt in the National Income :* B. DUCROS. *Public Finance and Alcohol :* G. TIXIER. *Financial Responsibility of Public Accountants and the Decree of 9th August 1953 :* P. VELLAS.

Bulletin de l'Institute de Recherches Économiques et Sociales

VOL. XX, NO. 3, MAY 1954. *La Belgique en 1953.*

VOL. XX, NO. 4, JUNE 1954. *La conjoncture économique de la Belgique :* M. WOITRIN. *Statistiques économiques courantes.*

Revue de l'Institut de Sociologie

NO. 4, 1953. *Sciences, Techniques et Société, à la lumière de l'histoire des Sciences :* J. PELSENEER. *Le social et l'individuel dans la science du langage :* M. LEROY. *Le Logement :* E. ESCH, E. S. KIRSCHEN, and J. POELMANS. *Hommes et bêtes : Action réciproque—Première partie : L'Équation personnelle :* R. AMY.

Schmollers Jahrbuch

VOL. 74, NO. 2, 1954. *Soziologie als Lebenskunstlehre :* O. KÜHNE. *Gedanken zu einer Berufsethik der Betriebe :* J. JOHANNESSON. *Über die Angleichung der Währungen in West- und Mitteldeutschland im Falle der Wiedervereinigung beider Gebiete :* R. MEIMBERG.

VOL. 74, NO. 3, 1954. *Statistische Sozialforschung : Werdegang und Gegenwartsprobleme :* C. LORENZ. *Die Hauptpunkte der Keynes'schen Theorie : Versuch einer kritischen Würdigung :* E. MÄRZ. *Erscheinungsformen und Wesen der Imperialismus :* J. GUMPERT.

Die Weltwirtschaft

NO. 1, 1954. *Weltwirtschaftliche Überlick. Länderberichte. Marktberichte. Branchenberichte Gründe und wirtschaftspolitische Konsequenzen der deutschen Überschusssituation :* W. GATZ. *Das "cash budget" im Bundeshaushalt der Vereinigten Staaten :* R. BINDER.

Wirtschaftsdienst (in German with English Air Mail Digest)

VOL. 34, NO. 4, APRIL 1954. *Industrial Fairs :* L. L. ROGGENBUCK. *"The German Export Danger" as the British See it. The Problem of Trade with Turkey. The Problem of Germany's Balance of Payments Surplus :* H. LOHMANN and E. T. NEVIN. *Finland's Foreign Trade and Currency Problems :* A. VON GADOLIN. *Industrialisation in Eastern Europe. The Shipchandlery Trade in the Federal Republic :* H. MORGENBESSER.

VOL. 34, NO. 5, MAY 1954. *The Real Prospects of East–West Trade. Marginal Notes on the Problem of "Under-developed" Countries :* N. KOESTNER. *The Automobile Industry in the Federal Republic :* H. EICHENHOFER.

VOL. 34, NO. 6, JUNE 1954. *New Transport Bills Discussed. We must not Discredit our own Policy. The Problem of Remunerative Housing :* J. HEUER. *Housing Construction and Housing Needs in the Federal Republic :* E. VON LUCADOU.

Wirtschaft und Statistik

VOL. 6, NO. 4, APRIL 1954. *Das Sozialprodukt im 2 Halbjahr und im Kalenderjahr 1953. Die Vorräte in der Wirtschaft 1951 bis 1953 :* O. SCHÖRRY. *Die Umsätze und ihre Besteuerung :* K. HERRMANN.

VOL. 6, NO. 5, MAY 1954. *Zahl und Art der Einkommensbezieher in den Haushaltungen :* K. HORSTMANN. *Der Verbrauch in Arbeitnehmerhaushaltungen im Jahr 1953 :* P. DENEFFE.

Jahrbücher für Nationalökonomie und Statistik

VOL. 166, NO. 2, APRIL 1954. *Kapital und Geld in klassicher und moderner Sicht :* M. KRÖLL. *Sinn und Ausdruck in der sozialen Formenwelt :* G. WEIPERT.

Weltwirtschaftliches Archiv

VOL. 72, NO. 1, 1954. *The Concept of Money :* J. PEDERSEN. *Die Tätigkeit der Reichsbank von 1876 bis 1914 :* K. R. BOPP. *Econometric Models and Welfare Maximisation :* H. THEIL. *The Concept of Energy in Economics :* S. D. ZAGOROFF. *Bemerkungen zu Bombachs Modell des wirtschaftlichen Wachstums :* M. J. BECKMANN.

Zeitschrift für die Gesamte Staatswissenschaft

VOL. 110, NO. 2, 1954. *Der Unternehmer in der Volkswirtschaft :* W. WEDDIGEN. *Der Zirkulartausch : Eine Kreislaufanalyse :* M. KRÖLL. *Mensch und Sach : Zum Problem des Eigentums :* H. DOMBOIS. *Die Bundeskompetenz zur Regelung des Wasserhaushaltswesens :* F. GIESE. *Wahlsoziologische Probleme des Nationalsozialismus :* S. S. NILSON.

Bayern in Zahlen

VOL. 8, NO. 3, MARCH 1954. *Überblick über die Bevölkerungsentwicklung in Bayern während der letzen 50 Jahre :* W. MAIER. *Die Eheschliessungen der Ausländer in Bayern von 1946 bis 1952 :* J. FILSER. *Die übertragbaren Krankheiten in Bayern 1953 :* C. MÜHLE. *Bayerns Nutzvieh Ende 1953 :* J. BUCK. *Interzonenhandel Bayerns im Jahre 1953 :* J. LEIPNER. *Der Reiseverkehr über die Auslandsgrenzen Bayerns während des Jahres 1953 :* J. LEIPNER.

VOL. 8, NO. 4, APRIL 1954. *Bayern als Grenzland :* L. LEIBERICH. *Bayerns Verwaltungsgebietseinteilung 1840 bis 1952 :* F. ZOPFY. *Die Wanderungen in Bayern im Jahre 1953 :* W. MAIER. *Der bayerische Weinbau im Jahre 1952 :* F. HELLER. *Die Ausfuhr Bayerns im Jahre 1953 :* J. LEIPNER. *Die bayerische Binnenschiffahrt im Jahre 1953 :* J. LEIPNER. *Weihnachtsbeihilfen für Hilfsbedürftige :* E. SCHMIDT.

Vierteljahreshefte zur Wirtschaftsforschung

NO. 2, 1954. *Zur konjunkturellen Situation :* A. WISSLER, I. RIECKENBERG and H. MARTELL. *Die Ergebnisse der vierteljährlichen Volkswirtschaftlichen Gesamtrechnung für diz Bundesrepublik : Erstes Quartal 1954 :* F. GRÜNIG and H. SCHIMMLER. *Die Erzeugungs- und die Geldwirtschaft der sowjetischen Besatzungszone im dritten Jahre des Fünfjahrplanes :* H. KOLBE and H. MEIER.

Europa Archiv

VOL. 9, NO. 7, APRIL 1954. *Sechs Jahre Benelux :* H. UMRATH. *Politik des Reisens ? Eine Untersuchung über die Bedeutung von Auslandsreisen für die Schaffung eines Europabewusstseins : II : "Austausch" und Europabewusstsein.*

VOL. 9, NO. 8–9, APRIL–MAY 1954. *Das Problem der europäischen Sicherheit auf der Berliner Viermächtekonferenz 1954 : I : Entwicklungsstadien des europäischen Sicherheitsproblems 1943 bis 1953 :* W. CORNIDES; *II : Die Verhandlungen über das Sicherheitsproblem auf der Berliner Konferenz von 1954 :* W. BÖDIGHEIMER. *Die Oesterreichverhandlungen auf der Berliner Konferenz von 1954, eine Uebersicht :* H. VOLLE and E. WALLRAPP.

VOL. 9, NO. 10, MAY 1954. *Menschenrechtsschutz und Europäische Integration :* F. BREITNER. *Europas Flüchtlings- und Bevölkerungsprobleme in der Sicht des Europarats :* P. FISCHER.

VOL. 9, NO. 11, JUNE 1954. *Die Diskussion über die gegenwärtige Rechtsstellung des Saarlandes :* E. MENZEL.

Schweizerische Zeitschrift für Volkswirtschaft und Statistik

VOL. 90, NO. 2, JUNE 1954. *Das ökonomische Problem des technischen Fortischritts :* J. NIEHANS. *Die westeuropäischen Industrieverbände und das Problem der Exportstimulierung :* H. HEROLD. *Les caractéristiques économiques des grandes entreprises de distribution :* H. PASDERMADJIAN. *Die Wertbeständigkeit in der Lebensversicherung : Eine Erwiderung :* C. GASSER. *Tautologisches und Ideologisches : Bemerkungen zu einem Aufsatz von Erich Preiser :* H. ALBERT. *Statistik der Geheimsphäre : Methodologische Bemerkungen zum neuen Kinsey-Report :* A. SCHWARZ.

Aussenwirtschaft

VOL. 9, NO. 1, MARCH 1954. *Betrachtungen zur Aussenwirtschaftspolitik :* H. BACHMANN and A. ROSSHARDT. *Die langfristige Exportfinanzierung in der Schweiz :* H. BACHMANN and E. GSELL. *Zölle oder Kontingente ? :* E. KÜNG.

Monatsberichte des Österreichischen Institutes für Wirtschaftsforschung

VOL. XXVII, NO. 3, MARCH 1954. *Die wirtschaftliche Lage in Österreich. Die Auswirkungen der ersten Liberalisierungsetappe. Der Ausländer-Fremdenverkehr Westeuropas.*

VOL. XXVII, NO. 4, APRIL 1954. *Die Konjunkturlage im Frühjahr 1954. Die wirtschaftliche Lage auf einzelnen Gebieten. Der Bundeshaushalt im Jahre 1953.*

VOL. XXVII, NO. 5, MAY 1954. *Die wirtschaftliche Lage in Österreich. Statistische Übersichten : Österreichische und internationale Wirtschaftszahlen.*

De Economist

VOL. 101, NO. 4, APRIL 1954. *Over de theorie der economische politiek :* J. TINBERGEN. *Enige problemen samenhangend met het vormen van een gemeenschappelijke markt in Schuman-Europa :* J. WEMELSFELDER. *Economische en sociale kroniek :* W. J. v. d. WOESTIJNE.

VOL. 101, NO. 5, MAY 1954. *Condities voor monetair evenwicht :* F. DE ROOS. *De Nederlandse concurrentiepositie op de West-Europese en Noord-Amerikaanse invoermarkten :* F. HARTOG. *Bedrijfsgrootte en verkaveling in de Nederlandse landbouw :* R. A. DE WIDT. *Economische en sociale kroniek :* W. J. v. d. WOESTIJNE.

Skandinaviska Banken Quarterly Review

VOL. XXXV, NO. 2, APRIL 1954. *Conditions for Progress :* P. JACOBSSON. *Economic Planning and Cheap Money Policy 150 Years Ago :* A. MONTGOMERY. *The Impact of Pension Funds on the American Capital Markets :* R. S. MURRAY.

Giornale degli Economisti e Annali di Economia

VOL. XIII, NO. 1–2, JANUARY–FEBRUARY 1954. *Un nuovo Procedimento di Soluzione delle Equazioni e dei Sistemi alle Differenze Finite :* G. DEMARIA. *Nota sull'uso delle Equazioni alle Differenze Finite non Omogenee :* V. DOMINEDÒ. *Alcuni Problemi di Equilibrio Monetario :* I. GASPARINI. *Dazi Generali ad Valorem all'Importazione e all'Esportazione : della loro simmetria con riferimento anche ad altre imposte :* G. PARRAVICINI. *Intorno al Metodo degli Intervalli di Confidenza ed alla Teoria dei Testi per Ipotesi Statistiche secondo J. Neyman ed E. S. Pearson :* B. COLOMBO.

VOL. XIII, NO. 3–4, MARCH–APRIL 1954. *A Proposito di una recente Opera sulla Imposizione degli Incrementi Patrimoniali :* A. SCOTTO. *Sull'unificazione ed il Rinnovamento della Scienza Economica :* E. ZACCAGNINI. *Per una Storia delle Dottrine Economiche : lo " Schmollers Jahrbuch " :* T. BAGIOTTI. *Economia della Finanza Pubblica :* G. U. PAPI. *Cicli Storici e Cicli Economici :* S. E. DE FALCO.

Rivista Italiana di Economia Demografia e Statistica

VOL. VII, NOS. 2, 3, 4, APRIL–DECEMBER 1953. *Considerazioni intorno ai movimenti numerici delle popolazioni umane :* G. SENSINI. *A proposito di una ricerca sull'andamento della mortalità nelle età senili :* B. DE FINETTI. *Alcuni dati provvisori sulle cause congiunte di morte in Italia :* B. BARBERI. *Su alcuni aspetti della dissomiglianza e della concordanza tra variabili statistiche, con applicazione alle distribuzioni degli sposi secondo l'età :* T. SALVEMINI. *L'ora della nascita e della morte :* S. SOMOGYI. *Indagine sulle nascite plurime : La misura statistica della multiparità :* V. AMATO. *E' possible la rivalutazione dei capitali nella assicurazione-vita ? :* R. CACCIAFESTA. *La distribuzione di X'e di una sua verifica sperimentale :* L. VAJANI. *Sulla determinazione, all'epoca del bilancio, delle riserve matematiche di una compagnia di assicurazione sulla vita :* F. EMANUELLI. *Le sommazioni mobili per colonna :* O. CAPOCCIA. *Equazione logistica applicata allo sviluppo delle Ferrovie :* N. QUARTO.

Banca Nazionale del Lavoro Quarterly Review

VOL. VI, NO. 27, OCTOBER–DECEMBER 1953. *The 1951 Census of Industry and Trade in Italy : Some Preliminary Results :* H. BARBERI. *Problems of E.P.U. and Italian Commercial Policy :* G. CARLI. *The Regional*

Approach towards the Expansion of World Trade : G. U. PAPI. *The Italian Economy : Growth Factors and Bottlenecks :* B. FOA. *The Historical Development of Anglo-Italian Trade :* S. B. SAUL.

Review of the Economic Conditions in Italy (Banco di Roma)

VOL. VIII, NO. 3, MAY 1954. *Investment in Public Works for Economic Stability :* G. DI NARDI.

Italian Affairs

VOL. III, NO. 3, MAY 1954. *Comments on the Yugoslav Administration in Zone B of the Free Territory of Trieste. Personalities of the New Italy. The State Budget. Methane : a New Source of Wealth for Italy. Post War Agricultural Development in Italy. The Italian Artisan.*

Critica Economica

NO. 2, APRIL 1954. *Nostro Paese. La C.E.D. e l'economia italiana :* A. GIOLITTI. *L'imposta sulle Società nel disegno governativo :* F. ANTOLINI.

Revista de Economia

VOL. VI, NO. 4, DECEMBER 1953. *Acerca da Previdência Nacional :* E. C. VIEIRA and J. MOURA. *Princípios fundamentais da banca moderna :* A. R. PEREIRA. *Notas sobre a economia de Angola :* U. NASCIMENTO.

Economic Bulletin of the National Bank of Egypt

VOL. VII, NO. 1, 1954. *Lessons in Industrialization. Egyptian Industry's Ailments. Deflation. End in Sight ? Convertibility for Non-Residents : Egyptian Industry Reviewed.*

Kobe Economic and Business Review

1, 1953. *Present Day Significance of Free Ports :* G. SHIBATA. *Development of Devaluation Problem in Post-war Japan :* K. MIYATA. *Japan's Trade with South and South-east Asian Countries—a Statistical Analysis :* F. KAWATA. *The Exchange Control Policy in Post-war Japan :* M. FUNITA. *On the Official Statistics of Foreign Trade in the Post-war Japan :* H. KATANO. *On Business History :* T. INOUE. *Problems of Regional Industrialization in Japan :* M. BEIKA. *A Research of Wage Income in Post-war Japan :* N. NOSE. *Revaluation in Japan :* S. WATANABE. *Last-in, First-out Inventory Method under the Japanese Tax Law :* M. MASUZAKI.

Osaka Economic Papers

VOL. II, NO. 2, MARCH 1954. *Critical Notes on the Theory of Interest :* Y. TAKATA. *Anti-Monopoly Law and Elimination of Excessive Concentration of Economic Power Law in Japan—Comparison between Anti-Trust Laws of Japan and those of the United States :* K. MESAKI. *Capital Accumulation and Reproduction :* T. ICHITANI. *Current Problems of Local Finance in Japan :* K. KINOSHITA. *Some Laws of Complementary and Substitutive Goods :* M. MORISHIMA.

Kyoto University Economic Review

VOL. XXIII, NO. 1, APRIL 1953. *System of Shipping Theory :* S. SAWA. *Dobb's Theories of Economic History :* H. HORIE. *Rousseau's position in the History of the Peasantry :* K. KAWANO.

VOL. XXIII, NO. 2, OCTOBER 1953. *Notes on the Analysis of Expected and Realized Monetary Flows :* M. BABA. *A Tentative Non-linear Theory of Economic Fluctuations in the Purely Competitive Economic System :* S. ICHIMURA. *Involuntary Unemployment Explained by Over-determinateness :* N. KAMAKURA. *Some Economic Reasons for the Marked Contrast in Japanese and Chinese Modernization :* C. D. SHELDON.

Statisztikai Szemle (*Hungarian text*)

JANUARY 1954. *The Objects and Methods of Statistics :* P. KUVSHINNIKOV and B. SMULEVICH. *Defects in Metallurgical Statistics :* G. BÁCS. *The Main Index-Numbers in Hospital Statistics :* A. KLINGER. *Control of the MTS Reporting System in 1953 :* I. SZEKULESZ and L. ZOLTAI.

FEBRUARY 1954. *Last Year's Volume of "Statisztikai Szemle" :* I. HUSZÁR. *The Present State of the Discussion Among Soviet Statisticians on the Notion, Objects and Methods of Statistics :* F. GYULAY. *For an Improvement in Statistical and Economic Work. Statistics of Industrial Accidents :* K. MILTÉNYI. *Contributions to the History of Hungarian Statistics :* I. MÉSZÁROS. *Problems of Accounting Quick-wearing Tools of Small Value :* Z. DEMETER. *Some Words on the Journal "Statisztika Ertesitö" :* T. HORVÁTH.

MARCH 1954. *The Concept of Statistics :* J. RÉDEI. *Determine and Utilise Reserves for the Lowering of Production Costs in Building :* K. VINOGRADOV. *Problems of Teaching Industrial Statistics :* O. LUKÁCS. *The New Tasks of Soviet Trade Statistics :* S. PARTIGUL. *Statistical Work in the Railway Section of the Ministry of Communications, Posts and Telegraphs :* L. NAGY. *For a Simplification of Calculations to Increase the Accuracy of Cost of Production Statistics :* L. TÜÜ. *Falsification of the Index of Industrial Production in the United States :* Z. KONESSY. *Accounting and Statistical Discipline on State Farms :* I. NAGY.

Voprosy Ekonomiki (*Russian text*)

No. 12, 1953. *On Production and Consumption Under Socialism :* K. OSTROVITYANOV. *The Programme for the Further Development of Food Industry Production in the U.S.S.R. :* I. STOZHILOV. *On the Sale of the Output of Collective Farms Located near Towns :* E. RUDAKOVA. *Reserves for the Further Upsurge of the State Farm Economy :* I. KANTYSHEV. *The German Democratic Republic—A Stronghold of the Peace-loving Strength of the German People :* M. SOBINOV. *The Operation of the Law of Value in the Chinese People's Republic :* SUE MU-TSIAO. *The Economic Upsurge of the Rumanian People's Republic :* M. OPRISAN and Ş. ARSENE. *Divergencies between the U.S.A. and Britain in the Sphere of External Payments :* P. CHERNYSHOV.

No. 3, 1954. *The Role of Economic Science in Communist Construction. The Economic Development of Soviet Ukraine :* A. OMAROVSKY. *Problems of Profits and the Turnover Tax in the U.S.S.R. :* A. BACHURIN. *On the Development and Strengthening of the Economic Ties between M.T.S. and Collective Farms :* V. VENZHER. *Problems of Raising Agricultural Technique and the Many-sided Development of the Communal Economy of Collective Farms :* P. KOTOV. *Livestock Development in Moscow Area Collective Farms :* N. PUZANCHIKOV. *Soviet Trade—the Basic Form of Consumer Goods Distribution under Socialism :* V. LOPATKIN. *Inflation and the Process of Capitalist Accumulation :* I. TRAKHTENBERG. *Results of the Discussion on the Definition of the Economic Effectiveness of Capital Investment in U.S.S.R. Industry.*

No. 4, 1954. *For a Further Upsurge of Socialist Agriculture. The Forms of Economic Ties Between Town and Country Under Socialism :* I. VYAZMIN. *Questions of the Development of the Economic Laws of Socialism :* A. SAZANOV. *On the Higher Technique of Socialist Production :* N. NEKRASOV. *Some Problems of the Economic Improvement of Flax-growing Collective Farms :* A. MERZLOV and A. TERYAEVA. *The Communal Economy of the "Red October" Collective Farm :* P. PROZOROV. *Problems of French Security :* V. LYUBIMOVA. *The Struggle of the People of Guatemala for National Independence :* G. TIKHONOV. *The Arbitrariness of British Colonisers in British Guiana :* YU. KOVROV.

No. 5, 1954. *An Increase in Grain Output is the Most Important Task of the National Economy :* L. GREKULOV. *The Economic Significance of the Union of the Ukraine and Russia :* P. KHROMOV. *On the Specialisation of Local and Co-operative Industries in the Urals :* A. EFIMOV. *From Experience of the Ramen Machine and Tractor Station :* I. SHIRYAEV.

Economic Laws in the Conditions of New Democratic China : TSYAN SUE-MO. *Commodity Production in the European People's Democracies :* I. DUDINSKY. *Taxation in Capitalist Countries—or the Working Classes Robbed by the Monopolists :* V. SOLODOVNIKOV. *How U.S. Unemployment Statistics are Falsified :* A. KATS.

Planovoe Khozyaistvo (*Russian text*)

No. 2, 1954. *Eliminate Errors and Shortcomings in Agricultural Planning. M.T.S.—the Main and the Deciding Factor in the Development of Collective Farm Production :* V. KHALTURIN. *Increase Machine and Automatic Equipment Production for the Food Industry :* N. PETROV. *Reserves for the Economy of Ferrous Metals in the National Economy :* I. TARASOV. *On Accelerating Construction and the Commissioning of Basic Funds :* I. IVANOV. *The Use of Plastics is an Important Reserve for Economy in the National Economy :* E. EFIMOV. *Planning Cultural Construction :* V. ZHINOV and F. KRAVCHENKO.

Vestnik Statistiki (*Russian text*)

No. 1, 1954. *Statistics in Lenin's Works :* T. KOZLOV. *Problems in the Analysis of Industrial Production Costs :* D. VAYNSHENKER. *"Business" Statistics :* I. SOSENSKY. *The Impoverishment and Ruin of Rural Workers in Capitalist Countries :* L. LVOV. *Shortcomings in Statistics of Automobile Freight Carriage. On the Improvement of Planning and Accounting Expenses of Catering Enterprises. Discussion in the Central Statistical Administration of Petrov, "Course of Economic Statistics."*

Finansy I Kredit S.S.S.R. (*Russian text*)

No. 3, 1954. *For a Simplification and Reduction of the Cost of the State Apparatus. Tasks of Financial Organs in State Revenue Operations :* F. UPYUPIN. *Cost Accounting and Profitability in Socialist Economy :* V. PERESLEGIN. *Ways to Strengthen Financial Control of M.T.S. Work :* S. NEDELIN. *Construction Accounts under Extended Contracts :* P. PODSHIVALENKO and N. SHUMOV. *Long Term Credits to Local Industry :* V. DYDIN and M. TSATKINA. *The Budget of the Ukrainian Capital :* V. ABRAMOV. *How to Calculate the Directors' Fund in the 1953 Annual Accounts :* S. RYUMIN. *The State Budgets of the People's Democracies in the Service of Building Socialism :* D. BUTAKOV.

Plánované Hospodářství (*Czech text*)

No. 3, 1954. *The Publication of the First Volume of Marx's Capital in the Czech Language :* O. ROTH. *Problems of Agricultural Price Fixing :* I. RUBIK. *Public Health Planning :* V. SHUSTOV. *Experience of the Prague Regional Planning Commission :* J. KRATOCHVIL.

No. 4, 1954. *Peaceful Construction in the U.S.S.R. and the European People's Democracies. The 1954 State Budget and its Connection with the Development of the National Economy :* V. KREYSA. *For Further Technical Progress in the Coal Industry :* H. KRASNIKOVSKY. *Public Health Planning :* V. SHUSTOV.

Gospodarka Planowa (*Polish text*)

No. 3, 1954. *The Fourth Year of the Six-Year Plan. Agricultural Mechanisation and the Increase of the Productive Resources of Agriculture :* J. GRYSIAK. *The Tasks and Organisation of Co-operative Flat Construction :* L. KEDZIERSKI. *Timber Pickling and the Economy Campaign :* B. ZYSKA. *Labour Security and Hygiene and the Improvement of Its Planning in the Textile Industry :* T. JUŚKIEWICZ.

No. 4, 1954. *Regional Land Classification and Agricultural Production Planning :* M. STRZEMSKI. *Responsibilities of State Farms in the Campaign to Raise Production :* Z. KARCZEWSKI. *The Development of Collective Farm Production and Changes in Village Life in the Wroclaw Voivodship :* J. MARSZAŁKOWICZ. *Small Industry's Tasks in Urban and Rural Catering :* W. ZAMBRZYSKI. *The Development of Refrigeration as*

a Factor in the Elimination of Waste and the Improvement of Supply to Consumers : W. ZAMBRZYCKI. *East–West Trade :* J. WERNER.

No. 5, 1954. *The State Plan is an Inviolable Law. Factory Collective Wage Agreement as a Factor in Realising Production Plans :* H. POPLAWSKI. *Prospects for Ferrous Metallurgy :* S. LOWINSKI and J. ZALEWSKI. *Problems in Reaching the Plan for the Cotton Industry :* W. RADZIKOWSKI. *The Importance of Drainage and Irrigation in the Development of Agricultural Production :* A. OBUCHOWSKI. *The System of Ex-works Prices and the Responsibilities of Purchasing Agencies :* K. SZONERT.

Ekonomist (*Serb text*)

No. 6, 1953. *Peasant Purchasing Power Before and Since the War :* D. ČOBELIĆ. *Some Considerations on the Contemporary Capitalist Enterprise :* K. MITRESKI. *The Development and Draft Plan of Yugoslav Industry in 1954 :* R. NIKETIĆ.

No. 1, 1954. *A Contribution to a General Definition of a Co-operative :* M. VUCKOVIĆ. *The Share of Yugoslavia and of Italy in the Commercial Traffic of Trieste :* V. PERTOT. *Yugoslav Foreign Trade Since the War :* M. PEROVIĆ.

No. 2, 1954. *Some New Elements in the Position of Economists :* M. MACURA. *Purchasing Credits in Our Economy :* M. ĆIROVIĆ. *U.S. Foreign Trade at the Cross-roads :* D. TODOROVIĆ. *State Intervention and American Agriculture :* V. MILENKOVIĆ.

Planovo Stopanstvo (*Bulgarian text*)

No. 7–8, 1953. *Marxist–Leninism in Action :* V. CHERVENKOV. *Industrial Development in the First Five Year Plan :* A. TSVETKOV and V. DONKOV. *For an Improvement in Control and Planning :* B. BOEV. *For the Full Use of Machinery in the Coal Industry :* B. KECHKOV. *Economy of State Materials—An Important Task for the National Economy:* V. VAKANOV. *Commodity Production and the Law of Value under Popular Democracy :* M. CONSTANDINESCU.

No. 9, 1953. *Speech of 8 September 1953 :* V. CHERVENKOV. *For a Further Improvement in Industrial Planning :* KH. BOYADZHIEV. *Planning the Intake of Scientific and Technical Personnel into Higher Educational Institutions :* T. AVRAMOV.

No. 10, 1953. *Karl Marx and His Theory of Accumulation :* A. SUNKOV. *Every Co-operative and State Farm Should Assure its Own Fodder Supplies:* I. NAYDENOV. *For an Improvement in Rural Co-operative Trade :* KH. KHADZINIKOLOV.

No. 11, 1953. *The Banner of the Great Socialist Revolution is Unconquerable. The National Income and its Distribution in Bulgaria :* N. VULEV. *Local and Co-operative Industry—an Important Source of Output :* N. RANGELOV and V. SAVOV. *The Basis for Calculating the Wages Fund :* N. TODOROV.

No. 12, 1953. *Speech at the Third Co-operative Farm Conference :* V. CHERVENKOV. *The Preparation of Young Skilled Workers an Important Factor in Building Socialism in Our Country :* G. ATANASOV. *The Introduction of Graphs in the Cyclic System of Coal Mining :* V. MECHKOV. *For a Wide Use of Model Blueprints :* B. BOEV. *Agricultural Planning :* G. GAPONENKO.

Probleme Economice (*Rumanian text*)

No. 1, 1954. *The Ideas of Lenin Illuminate the Way to Increased Welfare :* I. CHIŞINEVSCHI. *The Problem of Form and Content of Various Economic Categories under Socialism :* D. TRIFONOV. *The Mobilisation of Internal Reserves in Metallurgical Plants :* L. RADU. *For an Increase of Consumer Metalware Production in Heavy Industry :* R. LAZĂR. *Transport Planning in Rumania :* P. LUPŞE. *The Role of Advanced Technique in the Further Development of Agricultural Production in Rumania :* F. CONSTANTINESCU. *The Domination of Foreign Monopolies in the Oil Industry of Bourgeois-Landlord Rumania :* GH. BADRUS. *The Reduction of Trading Costs :* I. BOGDANOIV.

No. 2, 1954. *For a Continued Development of the Food Industry :* A. MOLDOVEANU. *The Introduction of a Régime of Strict Economy in Light Industry :* A. AVACHIAN and O. BERNSTEIN. *Aspects of the Increase of Commercial Production in Rumanian Agriculture :* E. DAN and C. MURGESCU. *The Importance of Studying Consumer Demand in Socialist Trade :* A. SOBARU. *Collaboration and Mutual Aid between the U.S.S.R. and Other States of the Democratic Camp :* M. HOROVIŢ. *The Aggravation of Conflicts on the Capitalist World Market :* A. SIMBOAN. *The Methodology of Industrial Labour Productivity Calculations :* V. DIMITRIU.

No. 3, 1954. *The System of Contracts and Purchases—An Important Means of Stimulating Livestock Production :* D. BRUMFELD and I. MÎZGAREĂNU. *Some Fundamental Principles in the Long-term Planning of Production and Investment in the Food Industry :* E. TRATTNER. *The Attainment of Financial Index-norms, an Important Task for Industrial Enterprises :* A. TĂNASE and I. URSACHE. *In Connection with Certain Lectures on Capitalist Public Finance :* N. CONSTANTINESCU. *The Domination of Monopolies in the U.S.A. :* T. ŞATELES. *State Social Insurance Funds :* A. GHEORGHIU.

No. 4, 1954. *The 1954 State Budget :* D. PETRESCU. *Liquidate the Lag in Animal Husbandry :* A. RAMANOVICI. *The Evolution of the Participation of Co-operatives in State Purchases and Contracting :* S. KIRALY and A. VICOL. *The Expansion of Accumulation in Socialist Agriculture :* E. SOLLERTINSKAYA. *The Struggle for a Reduction in Cost-prices and Strict Economy in Soviet Industry :* V. DIMITRU. *Planning and Profit Calculation in Enterprises with a Variegated Product-Mix :* R. LUCA. *A Just Application of the New Amortization Regulations :* I. IŢICOVICI. *Social Insurance : An Important Factor in Raising the Workers' Standard of Living :* L. SAVU. *The Methodology of Industrial Labour Productivity Calculation—A Comment :* E. SCHLESINGER.

NEW BOOKS

British

BUTLIN (S. J.). Foundations of the Australian Monetary System 1788–1851. Melbourne : Melbourne University Press (London : Cambridge University Press), 1954. 9″. Pp. v + 727. 57*s.* 6*d.*

[To be reviewed.]

CAIRNCROSS (A. K.) (Ed.). The Scottish Economy. A statistical account of Scottish life by members of the staff of Glasgow University. Social and Economic Studies, II. London : Cambridge University Press, for the Department of Social and Economic Research, Glasgow University, 1954. 9½″. Pp. xv + 320. 30*s.*

[To be reviewed.]

CAMERON (B.). The Determination of Production. An introduction to the study of economizing activity. London : Cambridge University Press, 1954. 9½″. Pp. ix + 101. 18*s.*

[To be reviewed.]

CHAMBERLIN (E. H.) (Ed.). Monopoly and Competition and their Regulation. Papers and proceedings of a conference held by the International Economic Association. London : Macmillan, 1954. 9″. Pp. v + 549. 36*s.*

[To be reviewed.]

CLARK (C.). Welfare and Taxation. Oxford: Catholic Social Guild (125 Woodstock Road, Oxford), 1954. 7½″. Pp. 80. 3*s.* 6*d.*

[Reviewed in this issue.]

DONNISON (D. V.). The Neglected Child and the Social Services. A study of the work done in Manchester and Salford by social services of all kinds for 118 families whose children came into public care. Manchester: Manchester University Press, 1954. 9″. Pp. v + 152. 12*s.* 6*d.*

[The subject of this book is the work done by the various statutory and voluntary services in Manchester and Salford in connection with problems of child neglect. It is based on detailed case-studies of 118 families. The author has some interesting suggestions to make about the vexed question of co-ordination between the many organisations which are often concerned with the same family. He does not favour the creation of yet another body to wield some sort of overall authority. Instead he proposes that opportunities should be provided more informally for one of the existing agencies or social workers to assume special responsibility for the more difficult cases, by agreement with the other parties involved. "Other visitors would not abandon the family altogether but would henceforth visit as little as possible and take no action without first consulting the person in charge. Which service would be chosen to assume responsibility for any given family would depend on which worker appeared to be in the best position to help."]

EINZIG (P.). How Money is Managed. The ends and means of monetary policy. Harmondsworth: Penguin Books, 1954. 7″. Pp. 368. 2*s.* 6*d.*

[To be reviewed.]

HENRY (J. A.). Sixty Years North of the Limpopo. The story of the coming of the Standard Bank to Rhodesia and Nyasaland, with some account of its early days there. Cape Town: The Standard Bank of South Africa, 1953. 10″. Pp. 45.

[This contains an account of the origins and subsequent development of the activities of the Standard Bank of South Africa in Rhodesia and Nyasaland. Some picturesque details are included of the circumstances in which the Bank's work was carried on in its early days.]

FEDERATION OF BRITISH INDUSTRIES. Exports in a Buyer's Market. Report of the F.B.I. Export Sales Conference, 1953. London: Federation of British Industries, 1953. 8½″. Pp. 46. 3*s.* 6*d.*

[This contains an account of the proceedings of a conference on export sales organised by the Federation of British Industries. The discussion dealt with five aspects of the question: export opportunities, the organisation of export business, relations between exporter and importer, the export sales force and export promotion.]

FEDERATION OF BRITISH INDUSTRIES. The World Bank. Report on a visit to the International Bank for Reconstruction and Development, December 1953. London: Federation of British Industries, 1954. 8½″. Pp. 32. 2*s.* 9*d.*

[This is a report on a visit to the International Bank for Reconstruction and Development made by a delegation from the Federation of British Industries in December 1953. The report describes the general nature of the Bank's operations, paying particular attention to British participation in undertakings financed by the Bank and possible means of expanding this.]

HICKS (URSULA K.). British Public Finances, Their Structure and Development, 1880–1952. The Home University Library. London: Oxford University Press, 1954. 7″. Pp. v + 225. 6*s.*

[To be reviewed.]

HOOKER (A. A.). Grain Futures, An introduction to the U.K. markets. London: Hooker, Hampson & Reynolds (Baltic Exchange Chambers, 24 St. Mary Axe, London, E.C.3.), 1953. 6″. Pp. 16. 1*s.*

[The author describes the technicalities of the grain market and sets forth the case for futures dealing as a socially useful activity.]

INCORPORATED ACCOUNTANTS' RESEARCH COMMITTEE. Register of International Research in Accounting. London: Oxford University Press, for the Incorporated Accountants' Research Committee, 1954. 8½″. Pp. 68. 7*s.* 6*d.*

[This register is the first of a series which it is hoped will appear at regular intervals in the future. Accounting for the purpose of the register is understood in a broad sense, and full particulars are given of the scope and state of the research projects recorded.]

INSTITUTE OF COST AND WORKS ACCOUNTANTS. Employee Remuneration and Incentives. London: Institute of Cost and Works Accountants, 1954. 9½″. Pp. 70. 7*s.* 6*d.*

[A survey of the various types of wage-incentive schemes in use in British industry. The authors discuss the advantages and disadvantages of each and the conditions to which it is best suited. The forbidding format of the book, with its close print and short, numbered paragraphs, should not be allowed to distract attention from the large amount of useful material which it contains. From the economist's point of view its value might perhaps have been enhanced had the authors chosen to expand somewhat their brief references to the extent to which the various methods are actually in use in different industries.]

MOOR (O.). How to Reduce Absenteeism by Positive Planning. London: Blick Time Recorders, 1954. 7½″. Pp. 34. 2*s.* 6*d.*

[The author is the chairman of a firm which supplies time-recording equipment. He quotes estimates to suggest that avoidable lateness and absenteeism are responsible for an annual loss in production in Great Britain of some £300 million, and then goes on to give an interesting account of a variety of ways in which the problem may be tackled.]

Newspaper Reading by University Students. A Survey carried out by S. Moos, A. Laing, A. J. Obder, and P. A. Bromhead. Durham: Department of Social Studies, the Durham Colleges in the University of Durham, 1954. 9″. Pp. 55. 2*s.* 6*d.*

[This is the report of an inquiry which has already attracted a good deal of attention in the Press. It is based on a study of the newspaper-reading habits of a sample of students in the Durham Colleges. Particulars are given of numbers of each of the daily and Sunday newspapers read and bought, stated reasons for preferring one paper to another, comparison of term-time and vacation reading, differences between men and women students and between those reading arts subjects and the natural sciences, and so on. A surprising finding is the small extent to which serious weeklies are read by students, notwithstanding their apparent preference for the more serious class of daily paper.]

PANKHURST (R. K. P.). William Thompson (1775–1833), Britain's pioneer socialist, feminist, and co-operator. London: Watts, 1954. 8″. Pp. v + 228. 15*s.*

[To be reviewed.]

POLAK (J. J.). An International Economic System. London: Allen & Unwin, 1954. 8½″. Pp. vii + 179. 21*s.*

[To be reviewed.]

PREST (A. R.) assisted by ADAMS (A. A.). Consumers' Expenditure in the United Kingdom 1900–1919. Studies in the National Income and Expenditure of the United Kingdom, No. 3. London: Cambridge University Press, 1954. 12½″. Pp. xiii + 196. 42*s.*

[To be reviewed.]

SCHUMPETER (J. A.). Economic Doctrine and Method. London : Allen & Unwin, 1954. 9″. Pp. 207. 15*s*.

[To be reviewed.]

STRAUSS (E.). Sir William Petty. Portrait of a genius. London : The Bodley Head, 1954. 8½″. Pp. 260. 25*s*.

[To be reviewed.]

TOYNBEE (A. and V. M.) (Eds.). Survey of International Affairs 1939–46. Hitler's Europe. London : Oxford University Press, for the Royal Institute of International Affairs, 1954. 10″. Pp. v + 730. 63*s*.

[To be reviewed.]

TUCK (R. H.). An Essay on the Economic Theory of Rank. Oxford : Basil Blackwell, 1954. 8½″. Pp. 52. 7*s*. 6*d*.

[To be reviewed.]

WALRAS (L.). Elements of Pure Economics, or the theory of social wealth. Translated by William Jaffé. London : Allen & Unwin, for the American Economic Association and the Royal Economic Society, 1954. 9″. Pp. 620. 42*s*.

[To be reviewed.]

Indian

DAS (N.). Men Without Work. An essay on unemployment. Eastern Economist Pamphlets, No. 21. New Delhi : The Eastern Economist, 1953. 9″. Pp. 44. Rs. 1.

[In this interesting and well-argued pamphlet, the author considers the chief categories into which unemployment in India can be divided and suggests suitable short-term and long-term remedies for the problem. He points out that rural and urban unemployment are closely related to each other, since it is the decline of village industry and the pressure of population on the land which induces migration to the towns. He quotes some depressing figures showing that while the urban population increased by nearly half between 1941 and 1951, there has been scarcely any appreciable increase in factory employment, at least since 1947. While not disputing that shortage of capital lies at the heart of the problem, Dr. Das calls attention to the anomaly that even such industrial capacity as exists has recently not always been fully utilised on account of deficiency of demand.]

IYENGAR (S. K.). Confessions of a Village Level Worker. Presidential Address to the Thirty-Sixth All India Economic Conference. Hyderabad : Indian Economic Association, 1954. 9″. Pp. 29.

[In this presidential address to the Indian Economic Association the author criticises what he conceives to be the unrealistic character of much of current economic policy in India. He speaks with particular severity of the failure of policy-makers and administrators to acquaint themselves with the realities of economic life in the less accessible rural areas and to relate their recommendations to these realities.]

MEHTA (S. D.). The Cotton Mills of India, 1854 to 1954. Bombay : The Textile Association (India), 1954. 11″. Pp. 308.

[This beautifully produced volume has been prepared under the auspices of the Textile Association (India). The occasion of its publication is the centenary of the foundation of the Spinning and Weaving Company by Cowasjee Davar in 1854. It represents the results of a great deal of research on the part of Dr. Mehta and his assistants, who have been able to cast new light on many aspects of the history of the industry, particularly in its earlier years.]

MUKHERJEE (R.). The New Czechoslovakia. An Indian sociologist looks at Czechoslovakia today. Bombay: Current Book House, 1952. 8½″. Pp. 104.

[A survey of the current political, economic and social conditions in Czechoslovakia. The author is enthusiastic about the ideals and achievements of the present regime. His book is based largely on material collected during a visit to Czechoslovakia in 1949.]

RANADIVE (B. T.). India's Five-Year Plan. What it offers. Bombay: Current Book House, 1953. 9″. Pp. 259. 12*s.* 6*d.*

[A critique of the Indian Five-Year Plan and the Planning Commission from the stand-point of the extreme left wing. The author surveys the various aspects of the plan and what has been achieved under it, and loses no opportunity of making clear his conviction that its shortcomings have been due to reluctance to make sufficiently sweeping institutional and social changes.]

SINGH (B.). Economic Planning in India. Bombay: Hind Kitabs, 1953. 9″. Pp. 155. Rs. 6.

[The author, who is Professor of Economics and Sociology at Lucknow University, has analysed the principles of the Indian Five-Year Plan. He emphasises that it is unique in its scale, covering about one-sixth of the total world population. In the first two years only 28% of the total planned for the five years has been achieved, which is partly to be explained by delays in starting and in expanding work. A main source of disappointment has been failure to find additional real resources in a country in which under-employment certainly exists. Inflationary pressures have been engendered, partly by overloading of the economy, but partly as a consequence of movements in the terms of trade and the cost of imports.]

American

BACKMAN (J.). Rate Policies and Rate Practices of the United States Post Office. Prepared for the use of the Advisory Council, the Committee on Post Office and Civil Service of the United States Senate. New York: Magazine Publishers Association, 1954. 9″. Pp. 215. $1.

[The large deficits incurred by the United States Post Office since the war have recently forced the question of postal rates before the public eye. Professor Backman here narrates the history of postal-rate policy in the United States and makes certain recommendations. He finds that considerable confusion has prevailed in the past with regard to the basic principles and objectives of rate policy. He recommends that the Post Office Department should aim to cover its total costs out of revenue, including in the latter any subsidy out of taxation which particular classes of postal service may be held to deserve in the public interest. At the same time efforts should be made, as they have not been in the past, to ascertain the out-of-pocket or variable costs of handling and delivering each class of mail, and the rates for each class should, unless there is special reason to the contrary, be high enough to cover at least these out-of-pocket expenses.]

BAUMOL (W. J.) and CHANDLER (L. V.). Economic Processes and Policies. New York: Harper & Brothers, 1954. 9½″. Pp. 690. $5.75.

[To be reviewed.]

BLANK (D. M.). The Volume of Residential Construction, 1889-1950. National Bureau of Economic Research. Studies in Capital Formation and Financing, Technical Paper No. 9. New York: National Bureau of Economic Research, 1954. 10½″. Pp. 97. $1.50.

[The basis of the new estimates of residential construction from 1889 to 1920 which are contained in this monograph was provided by the tabulation of local building-permit data carried out by the Work Progress Administration in the 1930s. The bulk of Dr. Blank's paper consists of a detailed description of the

procedure by which the permit data were boiled down into aggregative series. A crucial part in this procedure was played by the application to cities for which data were lacking of the relationship found to exist between population growth and residential construction in the cities for which building-permit data were available. Discussion of the results of the new series is for the most part postponed to a future publication. However, the findings confirm what had already appeared from earlier work, that the building boom and slump of the inter-war period were altogether exceptional in their violence. Indeed, the pattern of building from 1890 till the First World War resembled a low plateau till 1904 followed by a high plateau from then till 1917, rather than a recurring cycle. Interesting figures are also given showing that the boom in the building of hotels and apartment houses in the 1920s was a phenomenon having no real parallel before or since.]

CREAMER (D.), assisted by BERNSTEIN (M.). Capital and Output Trends in Manufacturing Industries, 1880–1948. National Bureau of Economic Research, Studies in Capital Formation and Financing, Occasional Paper 41. New York: National Bureau of Economic Research, 1954. 9″. Pp. 104. $1.50.

[This study of changes in the ratio of capital to output in American manufacturing industries will doubtless provide the seeds for many discussions, both with respect to the future characteristics of that economy and to the prospects for development of other economies. Dr. Creamer advances the thesis that the capital ratio in most manufacturing industries rose until about 1919, and then began a decline which has continued until, at least, 1948. Using Census and income-tax data, he has compared the ratios of capital to output for ten years, spread between 1880 and 1948; and in order to compensate for the effects of changing prices, accounting procedures and concepts, he has used a variety of estimates for capital and output. The former appears as fixed, working and total capital measured in reported, current and base-year values, and the likely effects of non-measurable trends in depreciation procedures are also considered. Output is measured as the value of the product and as the value added by the industry. These corrections are sufficient to convince all but the most sceptical reader—the person who would probably be overcome by qualms about the general vagueness of concepts and measurability of capital anyway—of the validity of the thesis. In a brief, but intriguing chapter following the establishment of the declining capital ratio, a comparison is made between the ratios of man-hours worked to output and capital to output. The first series, of course, shows a decline over the entire period, the latter after 1919: the conclusion is reached that in recent decades technical innovations have been oriented towards increasing the efficiency of capital as well as labour, rather than the replacement of labour by capital.]

A Critique of the Randall Commission Report. Prepared by K. Knorr and Gardner Patterson on the basis of a conference held at Princeton University in February 1954. Princeton: International Finance Section and Center of International Studies, Princeton University, 1954. 9″. Pp. 65.

[The idea behind this document is a novel and interesting one. A small conference of economists was held at Princeton at the beginning of February 1954 to discuss the report of the President's Commission on Foreign Economic Policy—the Randall Commission—which had then just been published. The present booklet is based on a stenographic transcript of the conference's discussion, edited into consecutive and readable shape. The discussion dealt in turn with the following aspects of the report: the post-war dollar problem, commercial policy, foreign aid, private foreign investment and convertibility, concluding with an assessment of the report as a whole. The discussion cannot be summarised, reflecting as it does a wide range of opinions on a wide range of topics; a document of this sort naturally cannot contain close and consecutive reasoning such as may be expected from the work of a single individual. At the same time a great many interesting points are made, and the sympathetic understanding shown by the participants of the foreign trade problems of the non-dollar world makes the discussion decidedly encouraging reading. The participants were Edward M. Bernstein, Harlan Cleveland, H. Van B. Cleveland, William Diebold, Jr., John K. Galbraith, Theodore Geiger, D. Gale Johnson, Klaus Knorr, Wilfred Malenbaum, Stacy May, Gardner Patterson, Judd Polk, Thomas C. Schelling, Herbert Stein, Robert Triffin, Jacob Viner and Clair Wilcox.]

Defense against Recession: Policy for Greater Economic Stability. A statement on national policy by the Research and Policy Committee of the Committee for Economic Development. New York: Committee for Economic Development, 1954. 11″. Pp. 53.

[In the opinion of the authors of this statement, an important part in increasing the stability of the United States economy can be played by business itself and by state and local governments as well as by the Federal Government. More stable inventory policies and greater attention to long-term trends rather than to short-term fluctuations in planning capital expenditure are among the chief contributions which it is suggested may be made by business. At the Government level the authors favour chief reliance being placed on automatic stabilisers and monetary policy, and they have a number of suggestions to make about how the efficacy of these two instruments might be increased. They argue that changes in tax rates and public works programmes should in general be reserved for cases where there is evidence that an unusually serious or prolonged recession is in prospect.]

Finding List of Canadian Railway Companies Before 1915. Compiled by N. G. Butlin. Washington, D.C.: Association of American Railroads, and Boston, Mass.: Baker Library, Harvard Graduate School of Business Administration, 1953. 11″. Pp. 31.

[The particulars given for each of the companies are the date of its creation, the province in which it operated and the legal instrument by which it was established. The companies are also divided into aided and unaided.]

Finley (Moses I.). Studies in Land and Credit in Ancient Athens. New Jersey: Rutgers University Press, 1952. 9″. Pp. vii + 332. $3.50.

[This is a study of Athenian law and usage with regard to the raising of loans of the security of real property. The chief source material consists of the inscriptions found on ὅροι, stones affixed to property to record the existence of a legal encumbrance on it. The study of these inscriptions, together with supplementary evidence derived from the orators and other sources, raises, as the author explains, some fundamental issues about the nature of commercial relations and ideas in Athens. Professor Finley argues that modern notions about relations between buyer and seller and between borrower and lender are largely inapplicable to Athenian practice. Since the creditor lacked the legal power to force a sale of the hypothecated property, he was obliged to regard this property more as a substitute for the money debt owed to him than as collateral security for it. The transaction represented therefore in some degree a carry-over from a non-monetary economy. Moreover, loans granted on the security of real property appear almost always to have been for purposes of non-productive expenditure. They differed in their fundamental character from the type of loan granted for commercial purposes on the security of ships or their cargoes.]

Jenkins (S.). American Economic Policy Toward the Philippines. Published under the auspices of the American Institute of Pacific Relations. Stanford, California: Stanford University Press (London: Geoffrey Cumberlege), 1954. 9″. Pp. v + 181. 32*s*.

[This is a detailed history and analysis of American economic policy towards the Philippines since the end of the Second World War, viewed against the background of economic and social conditions in the islands. Mrs. Jenkins finds much to criticise in recent American policies. In her view the influence of shifting political and strategic objectives has combined with the pressure of agricultural interests in the United States seeking protection against Philippine imports to prevent the working out and implementation of a consistent policy to solve the islands' very real economic difficulties.]

Knight (Sir Henry). Food Administration in India 1939–47. Stanford University Food Research Institute Series on Food, Agriculture, and World War II. Stanford, California: Stanford University Press (London: Geoffrey Cumberlege), 1954. 9″. Pp. 323. 60*s*.

[To be reviewed.]

MACCOBY (E. E.) and FIELDER (F.). Saving Among Upper-income Families in Puerto Rico. A Social Science Research Center Study. Puerto Rico: University of Puerto Rico Press, 1953. 9″. Pp. 165.

[This volume contains a remarkable wealth of information about the saving and expenditure habits of Puerto Rican families with incomes exceeding $2,000 a year—a group comprising about 10% of the island's families. It is based on an elaborate sample inquiry conducted in 1950 along lines similar to those used by the Survey Research Center of the University of Michigan. Particular attention is paid to the form assumed by saving. The strong orientation of this towards investment in real estate and retail trading is considered by the authors to present an important obstacle to the industrialisation of which Puerto Rico stands so much in need.]

MIKESELL (R. F.). Foreign Exchange in the Postwar World. New York: The Twentieth Century Fund, 1954. 9½″. Pp. v + 658. $5.

[To be reviewed.]

NEISSER (H.) and MODIGLIANI (F.). National Incomes and International Trade. A quantitative analysis. Urbana, Ill.: University of Illinois Press, 1953. 10″. Pp. 396. $7.50.

[To be reviewed.]

NEUFELD (M. F.). Labor Unions and National Politics in Italian Industrial Plants. Cornell International Industrial and Labor Relations Reports, No. 1. Ithaca, N.Y.: Cornell University Institute of International Industrial and Labor Relations, 1954. 9″. Pp. 146. $2.

[This is a study of the development and functions of grievance committees in Italian industrial plants from 1900 to the present time. The detailed narrative is more interesting than the rather trite conclusions which the author draws from it. The chief conclusion is that the political attitude of organised labour (and to a less extent of employers also) in Italy is so different from what it is in the United States that there is little prospect in the foreseeable future of grievance committees in Italian industry operating with the same success and with the same co-operative spirit as they have done in America.]

OLIVER (H. M.). A Critique of Socioeconomic Goals. Bloomington, Indiana: Indiana University Press, 1954. 9½″. Pp. 191. $3.

[To be reviewed.]

SCHICKELE (R.). Agricultural Policy. Farm programs and national welfare. London: McGraw-Hill, 1954. 9½″. Pp. v + 453. 52*s*.

[To be reviewed.]

TAYLOR (P. E.). The Economics of Public Finance. Revised edition. New York: The Macmillan Company, 1953. 9½″. Pp. 565. $5.50.

[This book is a revised edition of the volume originally published in 1948 and reviewed by Professor R. C. Tress in the ECONOMIC JOURNAL, December 1950. The general structure of the new edition is little different from the old. A praiseworthy attempt has been made to incorporate up-to-date factual information and to re-orient the discussion on compensatory fiscal policy so that it fits post-war inflationary conditions rather better. Not much has been done, however, to incorporate recent theoretical material. In general, the strictures raised by Professor Tress against the first edition still hold, and the new edition cannot be regarded as a "must."]

French

CHAMBERLIN (E. H.). La Théorie de la Concurrence Monopolistique. Une nouvelle orientation de la Théorie de la Valeur. Paris: Presses Universitaires de France, 1953. 9″. Pp. 329. 1,200 frs.

[This is the French edition of Professor Chamberlin's notable work *The Theory of Monopolistic Competition*. Professor Perroux has contributed a preface.]

MERCILLON (H.). Cinéma et Monopoles. Le cinéma aux États-Unis: étude économique. Paris: Armand Colin, 1953. 10″. Pp. 199. 700 frs.

[After some general observations M. Mercillon gives a short appraisal of the history of the American film and cinema industry. He then discusses the current position in the United States, Germany and the United Kingdom. M. Mercillon then makes a detailed analysis of the economic structure of the industry in the United States and considers this in the light of oligopoly theory.]

ZALESKI (E.). Les Courants Commerciaux de l'Europe Danubienne. Paris: Librairie XX^{e} Siècle, 1952. 8″. Pp. 564. 2,000 frs.

[In this extensive study of the Danubian area M. Zaleski is concerned not only with the riparian states but also with the general problem of the area lying between Germany and Russia. He takes the economic history of the area from pre-1914 through the early years of the successor States to the Austro-Hungarian Empire to the development of post-depression policies of autarchy. Finally, he considers the current situation in which German domination has been replaced by that of the U.S.S.R. It is M. Zaleski's hope, rather than his expectation, that the disadvantages of isolation or partial isolation from the European and world economies will overcome the cramping influences of Communist ideology.]

Belgian

Premiers Eléments d'une Comptabilité Nationale de la Belgique, 1948–1951. By Le Groupe d'Études de la Comptabilité Nationale. Brussels: Institut de Sociologie Solvay, 1953. 9½″. Pp. 209.

[This valuable book outlines the problems and methods of constructing the national accounts, and will doubtless prove particularly useful to Belgian students of national-income analysis. At the same time, the authors provide detailed statistics for Belgium, covering the period 1948–51.]

La Situation Économique de la Belgique et du Congo Belge. Edited by the Kredietbank, S. A. Brussels: Kredietbank, 1954. 8½″. Pp. 92.

[This useful little survey of economic conditions in Belgium and the Belgian Congo is amply documented with statistics. The post-war data include statistics for 1952 and partial information for 1953. There is a short summary in English.]

German

FORSTMANN (S.). Neue Wirtschaftslehren, Theorien und Hypothesen. Berlin: Duncker & Humblot, 1954. 9½″. Pp. v + 512.

[This scholastic contribution to the German literature on the New Economics provides some evidence of the author's acquaintance with a good proportion of the seven hundred publications cited at its end. The exposition is extremely abstract, occasionally mathematical and generally intended only for the more advanced and patient readers. A sidelight is cast on German academic life in a preface by Adolf Weber who, in commending the book, notes that already in an earlier work published in 1943 Forstmann had quoted certain Jewish authors with approval.]

HEIMANN (E.). Wirtschaftssysteme und Gesellschaftssysteme. Tübigen: J. C. B. Mohr, 1954. 9½". Pp. v + 250. DM. 18.

[This book is concerned with the Great problems of life: freedom, liberty, socialism, progress. The larger part of it is already available to English readers in articles that have appeared in *Social Research* and in a number of volumes of essays.]

HOFMANN (W.). Die Volkswirtschaftliche Gesamtrechnung. Berlin: Duncker & Humblot, 1954. 9". Pp. 217.

[This is a succinct exposition of the methods used in constructing social accounts and their history. Many of the theoretical problems are discussed, including that of the relative advantages of alternative summary measures of the underlying transactions, but little attention is given to the practical problems of obtaining the estimates. There is also a chapter on the deflation of the accounts to obtain estimates of real movements corrected for price changes.]

OPPENHEIMER (F.). Der Staat. Vierte Auflage. Stuttgart: Gustav Fischer, 1954. 8½". Pp. 138.

[This is a reprint of the late Professor Oppenheimer's work on politics, the first edition of which appeared in 1909 and was in continuous use till 1938. In that year this work, together with many others, became unpopular, and Professor Oppenheimer subsequently settled in the United States where he was able to continue his researches in the social sciences. The book, of course, suffers from its age, but there are obvious reasons for welcoming this reprint.]

Swiss

ZELLER (W.). Die fiskalische Belastung des Motorfahrzeugverkehrs mit besonderer Berücksichtigung der schweizerischen Verhältnisse. Winterthur: Keller, 1954. 8½". Pp. 149.

[In this primarily empirical study Dr. Zeller compares the taxes paid by motorists in Switzerland with the maintenance and construction costs of the roads they use. He considers various reasons for taxing motorists, that they can bear the taxes (which are in the nature of a luxury tax), that they should cover the full costs of the roads they use, and that they should not be at an unfair advantage as compared with the railways which have to bear the costs of their permanent way. However, no very clear conclusion emerges.]

Italian

ANTONELLI (G. B.). Sulla Teoria Matematica della Economia Politica. With an Introduction by G. Demaria and Notes by G. Ricci. Milan: Malfasi, 1952. 9½". Pp. 124. Lire 1,000.

[This is a reprint of a paper by a neglected mathematical economist, first published in 1886. There is an introduction by Professor Demaria and a commentary (much longer than the paper itself) by G. Ricci.]

GAMBINO (A.). Questioni di Teoria e Tecnica Monetaria. Padua: Cedam, 1953. 10". Pp. 129.

[A volume of monetary essays, including one on "Liquidity" and another on "The supply of money as the Achilles heel of the Keynesian system."]

GRIZIOTTI (B.). Saggi sul Rinnovamento dello Studio della Scienza delle Finanze e del Diritto Finanziario. Milan: Giuffrè, 1953. 10". Pp. 437. Lire 2,000.

[This volume of financial essays opens with a long paper in which Professor Griziotti surveys the development of public-finance studies in Italy over the last half century, a development in which the author himself has taken a leading part as teacher, as writer and as editor of the *Rivista di diritto finanziario*. The other essays, most of which deal with questions of method and with fundamental principles, exhibit the author's characteristic approach of constantly linking the economic aspect of public finance with the legal and political elements.]

LUZZATTO (G.). Studi di Storia Economica Veneziana. Padua: Cedam, 1954. 10″. Pp. 310. Lire 2,000.

[These essays by Professor Luzzatto have been collected and published by his colleagues on the occasion of his retirement from the Venice chair of economic history. The writings included range over the whole period of Venetian history from the eleventh to the twentieth century. After some papers on the port, shipbuilding and shipping, there follows a group of essays on the methods in which capital was raised for overseas ventures; a final group deals with public debt, currency and banking and also with the reliability of fourteenth-century economic statistics.]

Swedish

WOLD (H.). A Study in the Analysis of Stationary Time Series. Second edition, with an appendix by P. WHITTLE. Stockholm: Almqvist & Wiksell, 1954. 10″. Pp. v + 236. Sw. kr. 38.

[To be reviewed.]

Spanish

SARDÁ (J.). Uniones Aduaneras y Uniones Economicas. Madrid: Bibliteca de Ciencias Socialies, 1953. 7½″. Pp. 233. 60 pesetas.

[The first part of this book is devoted to an account of nineteenth-century experience with partial or complete economic unifications: the Zollverein, the Austro-Hungarian and Swiss Customs Unions, and the economic unifications of Italy. The second part deals with more recent times and contains discussions of the incorporation of Austria and Czechoslovakia into the German economic system in 1938–40, of Benelux and of recent steps towards European economic unification, including the European Payments Union. The appendices include a brief essay on the theory of economic union and a full bibliography of recent writings on the subject.]

Official

BRITISH

FERGUSON (S. M.) and FITZGERALD (H.). Studies in the Social Services. History of the Second World War, United Kingdom Civil Series, edited by Sir Keith Hancock. London: H.M. Stationery Office and Longmans, 1954. 10″. Pp. ix + 367. 22*s.* 6*d.*

[To be reviewed.]

GENERAL REGISTER OFFICE. Census 1951, England and Wales. County Report, Middlesex. London: H.M. Stationery Office, 1954. 13″. Pp. 69. 20*s.*

GENERAL REGISTER OFFICE. Census 1951, England and Wales. County Report, Essex. London: H.M. Stationery Office, 1954. 13″. Pp. 117. 25*s.*

[These are the second and third of the County Reports of the Census to be published. Both Middlesex and Essex have increased their population substantially since 1931, in contrast with the County of London, where the population has declined. The number of persons per room has declined between 1931 and 1951 from 0·84 to 0·75 in Essex and from 0·80 to 0·74 in Middlesex. As in the country as a whole, this decline is almost exclusively the result of the increase in the proportion of the population living in smaller households, the latter being on the average housed at a lower density. Little change is shown over the last twenty years in the number of persons per room in households of given size.]

CANADIAN

RESTRICTIVE TRADE PRACTICES COMMISSION, DEPARTMENT OF JUSTICE, OTTAWA. Report Concerning an Alleged Combine in the Distribution and Sale of Gasoline at Retail in the Vancouver Area. Ottawa: Department of Justice, 1954. 9½". Pp. 165.

[This is a factual report similar in style to others recently published by the Restrictive Trade Practices Commission. The Commission is not expected by its terms of reference to recommend prosecution or non-prosecution, but on the basis of its finding that the allegation of a combine was substantiated, it makes a number of suggestions with regard to remedies which it considers to be desirable and practicable in the present case.]

RESTRICTIVE TRADE PRACTICES COMMISSION, DEPARTMENT OF JUSTICE, OTTAWA. Report Concerning Alleged Instances of Resale Price Maintenance in the Sale of China and Earthenware. Ottawa: Department of Justice, 1954. 9½". Pp. 79.

[This report concerns alleged attempts at resale price maintenance on the part of a Canadian firm which acts as agents for British manufacturers of pottery. The desire of the firm that the suggested resale prices should be observed by merchants is said to have been due to their view that "price uniformity is necessary to avoid what is termed 'confusion' in the sale of goods classed as a prestige line of pottery."]

AMERICAN

The Federal Reserve System, Purposes and Functions. Third Edition. Washington, D.C.: Board of Governors of the Federal Reserve System, 1954. 8". Pp. 208.

[This is the third edition of a handbook, expository rather than critical in character, designed to describe the general principles of operation of the Federal Reserve System. It may be recommended as a lucid and up-to-date introduction to the subject.]

Income Distribution in the United States by size, 1944–1950. A supplement to the Survey of Current Business. Washington: United States Department of Commerce, 1953. 11½". Pp. 86. 65 cents.

[The figures here presented and commented upon are intended to be the first of a regular series which will evidently become a standard reference. The basic tables are comparatively brief, and most of the space is occupied by descriptions of methods and sources and commentary on the results. Figures are given of the size-distribution of income before tax in 1944, 1946, 1947 and 1950. Post-tax figures are calculated for 1950 only. Separate tables are given of income distribution among the three categories, non-farm families, farm operator families and unattached individuals. A striking finding is the lack of any significant change between the four years studied in the pattern of distribution, as measured by the percentage share of total family income received by successive fifths of consumer units ranked by size of income.]

TENNESSEE VALLEY AUTHORITY. The Use of the Earth for the Good of Man. Washington, D.C.: U.S. Government Printing Office, 1954. 9". Pp. 82.

[A popular illustrated summary of the report of the Tennessee Valley Authority for the year ending June 30, 1953.]

DUTCH

CENTRAL PLANNING BUREAU. Central Economic Plan 1954. The Hague: Central Planning Bureau, 1954. 9½". Pp. 46.

[The Netherlands is one of the very few countries of Western Europe which continues to work out each year a central economic plan and to use it as a basis of economic policy. The English version of the 1952 Plan was so generally welcomed that the 1954 Plan has again been translated. In 1952 the forecast

suggested certain difficulties ahead which might have to be remedied by possible government measures, the effects of which on the economy were predicted. In the 1954 Plan no such difficulties are foreseen, and no " alternatives " are therefore analysed.]

INTERNATIONAL

EUROPEAN COAL AND STEEL COMMUNITY. Report on the Situation of the Community at the beginning of 1954. Luxembourg: The High Authority, European Coal and Steel Community, 1954. 9". Pp. 61.

EUROPEAN COAL AND STEEL COMMUNITY. Address delivered by M. Jean Monnet, President of the High Authority, before the Common Assembly at the opening of the extraordinary session of January 1954. Luxembourg: The High Authority, European Coal and Steel Community, 1954. 8". Pp. 18.

EUROPEAN COAL AND STEEL COMMUNITY. Second General Report of the High Authority in the Activities of the Community (13th April 1953 to 11th April 1954). Luxembourg: European Coal and Steel Community, 1954. 11½". Pp. 144.

[These three informative and interesting documents are largely complementary. The first two deal chiefly with outlines and general principles, while the last provides a detailed statistical survey of prices and trade during the year as well as an extended account of the High Authority's own activities. The later date of the last of the three documents enables its authors to take a rather more optimistic view of certain matters which were found disquieting at the beginning of the year. In particular, some success seems to have attended the efforts of the High Authority to overcome the difficulties it experienced during 1953 in bringing about genuine competition in the steel market.]

INTERNATIONAL LABOUR OFFICE. Minimum Wages in Latin America. Geneva: International Labour Office (London: Staples, for the International Labour Office), 1954. 9½". Pp. 184. 6*s*.

[A brief comparative analysis introduces the detailed survey of national systems that occupies the bulk of the book. It is suggested that while even in present conditions the enforcement of minimum wage-rates is capable of having a valuable effect in preventing exploitation of labour in enterprises where the level of productivity and profits would enable adequate wages to be paid, productivity is in general so low in Latin American countries that " the future of minimum wage legislation . . . is bound to be closely linked with the progress of their economic development."]

INTERNATIONAL LABOUR ORGANISATION. Workers' Housing Problems in Asian Countries. Geneva: International Labour Office, 1953. 9½". Pp. 177.

[Standards of housing, particularly in towns, have in many parts of Asia deteriorated even below their pre-war level on account of war damage, population increase, townward migration and various other causes. This report analyses the nature and causes of the problem and describes measures currently taken by governments and other bodies in order to improve the situation. Chief perhaps among the many valuable recommendations made in the report is that priority should be accorded to the construction of short-life dwellings, since the factors of production employed in their construction—mainly unskilled labour—are in abundant supply. Construction of more permanent dwellings is in direct competition with other forms of investment, and cannot therefore proceed very rapidly.]

UNITED NATIONS. Demographic Yearbook, 1953. New York: United Nations Statistical Office and Department of Economic Affairs, 1954. 11½". Pp. 441. 47*s*. 6*d*.

[In accordance with its now established practice of concentrating each year on a particular aspect of demographic statistics, the yearbook in its present issue contains statistics on population, births, deaths, marriages and expectation of

life. The figures on expectation of life are the result of new compilations. There is also a full bibliography of sources of demographic statistics. No figures are included this year on migration, marital status, fertility and a number of other topics which have been covered in certain of the previous issues.]

UNITED NATIONS. Economic Survey of Asia and the Far East, 1953. New York: United Nations Department of Economic Affairs, 1954. 11". Pp. 161. 11*s*.

[In its present issue this report contains for the first time surveys of economic developments within the individual countries comprising the region. These country surveys occupy most of the space of the report. In the introductory discussion of the situation in the region as a whole, particular attention is given to the problem of securing finance for national programmes of development—a problem rendered more acute by the decline in the prices of many of the chief exports of the region in the last few years.]

UNITED NATIONS. The International Flow of Private Capital, 1946–1952. New York: United Nations Department of Economic Affairs, 1954. 9". Pp. 61. 3*s*.

[This interesting survey may be considered as a sequel to a previous United Nations publication, *International Capital Movements during the Inter-War Period*, noted in the ECONOMIC JOURNAL, March 1951. Much useful statistical material has been gathered from a variety of sources, and is subjected to an illuminating analysis. Although the volume of private capital export in 1946–52 greatly exceeded that of the 1930s, the pattern of post-war lending has more resembled that of the little that did take place in the 1930s than it has that of the 1920s. The finance of public utilities by international private lending, which was once the mainstay of international investment, has now virtually ceased, and public agencies, especially the International Bank, have become the only foreign source of finance for such undertakings. The flotation of loans by governments for sale to private investors abroad has likewise virtually dried up. Direct investment, particularly in petroleum and other extractive industries, has been the chief class of private international investment since the war. Little private capital has been attracted to the poorest and most over-populated countries, and foreign investment in manufacturing has been chiefly confined to countries that are already fairly wealthy and offer sizeable domestic markets. In the opinion of the authors, both the amount and the character of private international investment since the war have been decisively influenced by the anxiety of investors to ensure the transferability of the return on their investments in a world of balance-of-payments disequilibria and inconvertible currencies.]

UNITED NATIONS. Statistical Yearbook, 1952. Prepared by the Statistical Office of the United Nations Department of Economic Affairs. New York: United Nations, 1954. 11½". Pp. 578. $6.

[This Yearbook has now established a more or less standardised format, and the chief respect in which the present issue differs from its predecessors is in the inclusion in many of the tables of countries for which statistics were formerly not available. Most of the series are taken back to 1933.]

UNITED NATIONS FOOD AND AGRICULTURE ORGANISATION. The State of Food and Agriculture 1953: Part II—Longer Term Prospects. Rome: FAO, 1954. 11". Pp. 83. 5*s*.

[This report is based on national estimates or plans of food production in 1956/57. Particulars are given of the prospects of increasing production of different commodities and in different regions, and the various technical, economic and other obstacles to increased production are discussed. As would be expected, the estimates quoted foreshadow considerable increases in output, and in some cases these increases are of such a magnitude as to threaten to exceed demand at current prices by a substantial margin. In the past, however, government forecasts of agricultural production have proved to be strongly biased in the direction of excess, and for this reason, as well as others, the authors do not regard the prospect of surpluses developing as more than a possibility. However, " nothing could be more damaging to future agricultural progress than the emergence of burdensome surpluses in the next few years," and the authors therefore recommend that urgent attention be given to devising policies to cope with agricultural surpluses should these become a reality.]

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